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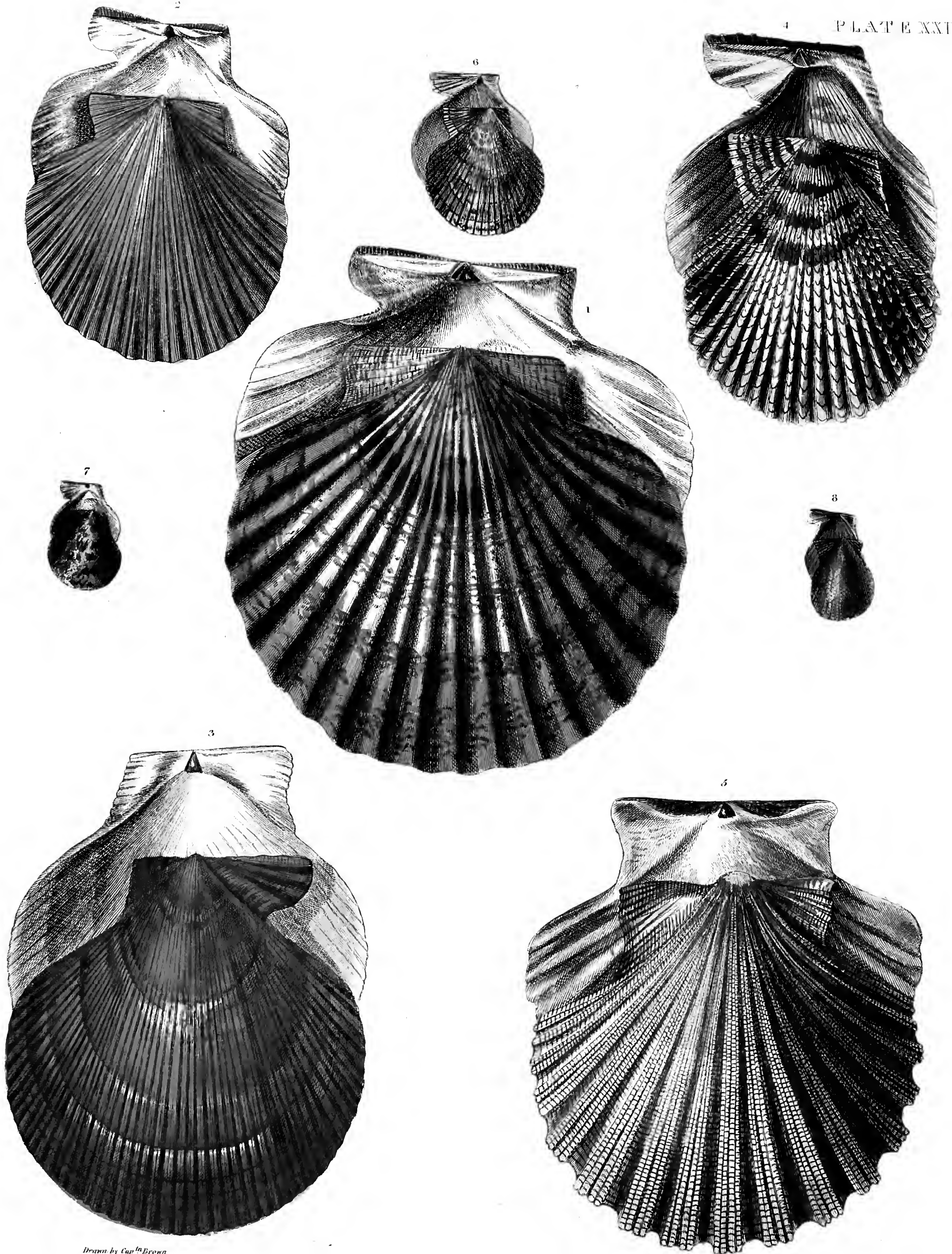












Drawn by Cap<sup>tn</sup> Brown

Engraved by WILLIAMS & EDWARDS



ILLUSTRATIONS  
OF THE  
RECENT CONCHOLOGY  
OF  
GREAT BRITAIN AND IRELAND,  
WITH THE  
DESCRIPTION AND LOCALITIES OF ALL THE SPECIES,  
MARINE, LAND, AND FRESH-WATER.

DRAWN AND COLOURED FROM NATURE BY  
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LATE PRESIDENT OF THE ROYAL PHYSICAL SOCIETY, &c., &c.

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SECOND EDITION, GREATLY ENLARGED.

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## PREFACE TO THE SECOND EDITION.

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ALTHOUGH Conchology has been a favourite pursuit from very early periods of civilization, yet its great value as a science has but recently been rendered manifest, from its utility in connection with Geology, in identifying strata which are of ancient or more recent formation. For we find on investigating the crust of our Globe, that whole races of Mollusks have existed and become extinct during different geological epochs; and that it is only in the more recent deposits that species identical with those existing on the land, and in the present seas, are to be met with; hence the importance of a knowledge of Recent as well as Fossil Conchology. This fact, as well as the general importance of this branch of study, has been acknowledged by the greatest Modern Geologists.

Up to the present time no work has appeared embracing half the species which have been detected in Great Britain and Ireland, and it was with a view to supply the desideratum, that the Author undertook the present, as well as its sister work "ILLUSTRATIONS OF THE FOSSIL CONCHOLOGY OF GREAT BRITAIN AND IRELAND;" which, together, embrace pretty complete Illustrations and Descriptions of all the species, Ancient as well as Recent, which have been met with in our Islands.

The general arrangement adopted in the following work is that of Lamarck, according to the descending scale, with such slight alterations and the addition of some new Genera, which more recent observations have rendered necessary, since the time of that celebrated Malacologist. The Author has been more solicitous to improve a classification, which has been almost universally adopted by European as well as Transatlantic Conchologists, rather than to attempt a system of his own, like other recent writers on this branch of Natural History; all of whom have signally failed in founding a classification likely to supercede that of Lamarck. It is to be lamented that ambition should prompt naturalists to change established classification and nomenclature, as nothing tends so much to retard the progress of science.

When this Second Edition was commenced, the Author contemplated giving reduced Illustrations of one Animal of all the British genera, which had been investigated; but, upon more mature consideration, it appeared to him that small figures could not fail to prove unsatisfactory to the Malacologist, and to represent them the size of life would run out the book to a

greater extent than might be desirable to those who studied the shells alone; he therefore reserved the figures and descriptions of the Animals for a separate treatise, which will appear uniform with the present Work. This arrangement, it is hoped, will prove more satisfactory to both parties. He has, however, given two plates of Land and Fresh Water Mollusca the size of life. The representations of the interesting genus *Limax*, are copied from beautiful and correct drawings kindly furnished by the Rev. B. J. Clarke, of Tuam, Ireland, who has lately bestowed much attention on, and ably investigated the *Limacidæ* of his native country.

Authors have admitted into the British Catalogue, species which are not indigenous; these have been omitted, but such as appeared in the First Edition of this work have been allowed to remain on the plates, the names only being given without descriptions.

Every shell, as far as possible, has been drawn from Nature, and generally from the largest and most beautiful specimens which the Author could meet with. But some of the smaller species, whose existence rests on the authority of Walker and Adams, he has been obliged to copy from their works, and therefore does not hold himself responsible for their accuracy.

In recording the names of those to whom the Author is indebted for aid in the following Work, he must particularly notice those of his late lamented friends Dr. Leach, formerly Chief Zoologist in the British Museum, and General Richard Bingham, of Melcombe, Dorsetshire. The first of these, with that noble liberality for which he was prominently distinguished,—although engaged with a similar work at the time the Author was preparing his First Edition,—threw open his treasures for his use, and otherwise aided him as far as possible in his investigations. To the latter the British Conchologist, and himself in particular, are deeply indebted for the discovery of many new minute species. He spared neither trouble nor expense in following up this branch of Natural History. It will also be seen how much his valued and early friend Stewart Ker, Esq., has added to the Mollusks of the Clyde, and he must also cordially acknowledge his obligations to his friends James Smith, Esq., of Jordan Hill, near Glasgow; Professor Forbes, King's College, London; James Gerard, Esq., Edinburgh; Sir Oswald Mosley, Bart.; W. C. Trevelyan, Esq., of Nettlecombe Abbey; Thomas Glover, Esq., of Smedley Hill, Manchester; William Nicol, Esq., Edinburgh; William Bean, Esq., Scarborough; Lieutenant William Beaumont, R.N., for specimens of *Lymnæa involuta*; and to Miss Thomson, of Kendal: and for information on Irish Conchology, to his old friend and fellow-labourer in Conchology M. J. O'Kelly, Esq., Rochestown House, County of Dublin; Robert Ball, Esq., and Miss Mary Ball, Dublin; Thomas William Warren, Esq., of Dublin, who possesses the best collection of indigenous shells in Ireland; and to Dr. Mc. Gee, of Belfast.



# SYSTEMATIC INDEX.

## CLASS FIRST.

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## CLASS SECOND.

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# ERRATA.

THE FOLLOWING CORRECTIONS MAY BE CUT OUT, AND PASTED IN THEIR PROPER PLACES.

Page 1, col. 1, line 9, for Genus 1, Nautilus, read ROTALIA.  
Ib. No. 1, read *Rotalia Beccarii*, *R. R. R. R.* Ib. No. 2, read *R. Beccarii*, Ib. No. 3, read *R. crassula*, Ib. No. 4, read *R. umbilicatula*, Ib. No. 5, read *Polystomella depressula*, *P.* Ib. No. 6, read *R. inflata*, Ib. No. 7, read *R. laevigatulus*, Ib. No. 8, read *Polystomella calcar*, *P.* Ib. col. 2, No. 9, read *P. crispus*. Ib. No. 10, read *Spiralina carinatula*, *S.* Ib. line 21 from bottom, for 22, read 21. p. 3, col. 2, line 18 from bottom, for Tyne, read Tynningham p. 4, col. 1, line 2 from bottom, for 4, read 3 Ib. col. 2, line 7 from bottom, for Lamarck, read Bruguière p. 5, col. 1, No. 4, for *varicosum*, read *varicosa*. Ib. line 13 from bottom, for 64, read 65 Ib. Genus 8, for Lamarck, read Bruguière p. 7, col. 1, No. 15, for *F. graciles*, read *Pleurotoma gracilis* p. 8, col. 2, line 4, after 33 add pl. V. p. 9, col. 2, No. 2, for *P. vinctus*, read *Lacuna vincta*, *L.* Ib. No. 3, for *P. canalis*, read *Lacuna canalis*, *L.* p. 10, col. 1, Nos. 6, 8, 9, 10, for *P.* read *Lacuna*, *L.* p. 11, col. 1, line 11, dele apostrophe at Adams. Ib. col. 2, No. 16, for *acuta*, read *marginata* and add Syns. of No. 55. Ib. No. 19, for 57, read 67 p. 15, col. 2, No. 21, for 83, read 48 Ib. for Genus TURBO, read LITTORINA. Ib. Nos. 1, 2, 3, 5, 6, 7, 8, 9, 11, 12, 13, 14, read *L.* for *T.* and Nos. 10, 15, 16, 17, read *M.* for *T.* p. 18, col. 2, No. 5, add pl. LVII, f. 9, 10. Ib. No. 6, for 5 and 8, read 2 and 3. p. 20, at all the numbers of the Genus Spira, for *C.* read *S.* *S.* *S.* *S.* *S.* *S.* *S.*

Page 21, col. 1, No. 3, for pl. XXI,\* f. 1, 2, read pl. LVII, f. 7; Ib. col. 2, No. 3, for 44, 45, read 34, 35. p. 22, No. 6, for *pullus*, read *pulla*, p. 24, col. 1, No. 1, line 4, for *ianthina*, read *ianthina*, Ib. col. 2, for Adamson, read Adanson. Ib. No. 1, line 6, add p. 224; p. 25, No. 2, for pl. LXI, read LVII, Ib. No. 4, f. 7, 11, refers to *N. nitida*, see p. 130. Ib. col. 2, dele Genus NERITOIDES, and unite the species with Littorina; for *N. littoralis*, read *L. Nerotoides*, p. 26, col. 1, No. 1, line 11, for Montford, read Montfort, Ib. col. 2, No. 1, line 8, dele Brard, Coq. de Paris, p. 174, pl. 7, f. 1; p. 28, col. 1, bot-

tom line, for *fragiles*, read *fragilis*, Ib. col. 2, line 27 from bottom, for f. 11, read 26 and line 29, dele f. 5. p. 29, col. 1, line 24 from bottom, for XV, read X, p. 31, col. 1, No. 1, line 8, for p. 34, read p. 48; p. 32, col. 1, No. 5, line 7, for p. 35, read 49; Ib. No. 6, line 1, for 49, read 39, p. 33, col. 1, No. 9, line 1, for 48, 49, read 50, 51. Ib. col. 2, No. 10, line 2, after 33 add \* and line 15, for *crasius*, read *crassus*, Ib. No. 1, line 1, for 50, 51, read 48, 49. and line 3, for Ency. Brit., read Edin. Ency., p. 34, col. 2, No. 2, after 15 add 15. Ib. No. 1, line 2, after 15 insert \* and line 7, for *Odostoma*, read *Odostomia* p. 35, col. 1, No. 1, for pl. XIV, read XV, Ib. col. 2, No. 2, for pl. XIV, read XV, p. 41, col. 1, No. 1, after 36 add \* p. 46, col. 1, 8th line from bottom, for *Carthusianella*, read *Carthusiana* p. 47, col. 1, No. 16, after f. 47 add \* p. 51, col. 1, No. 30, after 48 add \* p. 58, col. 1, No. 3, for pl. XIX, f. 45, 46, read LVII, f. 5, 6; and line 2, dele f. 1, 2. p. 63, col. 2, No. 2, line 3, for Dun., read Dan., p. 65, col. 2, No. 3, line 1, for f. 20; read 7. p. 70, col. 1, No. 7, after f. 12 add \* Ib. col. 2, No. 8, after f. 13 add \* Ib. No. 9, after 15 add \* p. 72, col. 2, No. 6, for NIVIVS, read NIVEUS, p. 73, col. 2, No. 13, add pl. XXV, f. 8. p. 96, col. 1, No. 4, dele f. 11 and add 13. p. 103, col. 2, lower No. 2, for 14, read 15. p. 106, col. 2, No. 4, for f. 16, 17, read 19. p. 108, col. 2, No. 2, for f. 25, 26, read 26, 27. p. 112, col. 1, 4th line from bottom, after 3 add \* Ib. col. 2, No. 2, dele second 2 and add \* p. 117, col. 1, No. 1, add 11, 12, 13. p. 118, col. 2, No. 1, for LVI, read LI, p. 119, col. 1, after *Variety c*, add f. 10. Ib. col. 2, No. 2, for STIATUS, read STRIATUS, p. 120, col. 2, No. 1, line 11, for Fig. 8, 9, read Pl. LIV, f. 8,\* 9.\*

## THE FOLLOWING WORKS,

BY CAPTAIN THOMAS BROWN, M.W.S., M.P.S.,

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# CLASS FIRST.

## UNIVALVE TESTACEOUS MOLLUSCA.

### ORDER I.—CEPHALOPODA.

Head of the animal emanating from a bag-shaped mantle, and surrounded by inarticulated arms, provided with a sucker, and investing the mouth; two sessile eyes; mouth furnished with two horny mandibles; three hearts; the sexes in separate individuals.

#### FAMILY I.—NAUTILACEA.

Shell discoid, with a central spire, the cells short, and not extending from the centre to the circumference.

##### GENUS 1.—NAUTILUS.—*Linnaeus*

Shell discoid, spiral, multilocular, with simple partitions; volutions contiguous, the last or body-one enveloping the rest; the septa transverse, and externally concave, perforated in the disc; margins entire.

1. *N. Becarii*, pl. I, f. 11.—First Edition, pl. 52, f. 11; Montagu's Testacea Britannica, p. 186, pl. 18, f. 4; Walker's Minute Shells, f. 63.

Shell with four or five volutions, the joints deeply sulcated; ten septa in the first whorl; convex above, and flat beneath, the markings less distinct, aperture turned downwards, and not clasping the body volution; siphon small, and usually situate in the convex front; covered with a brown epidermis, but white when divested of its skin; in which condition, if the animal is alive, it is of a crimson colour, size not a line. Found on the Devonshire coast, and in the Frith of Forth, adhering to the *Fucus vesiculosus*, the roots of Algae, and on Oyster shells.

2. *N. Becarii perversus*, pl. I, f. 12.—First Edition, pl. 52, f. 12; Montagu, p. 187, pl. 18, f. 6; Walker, f. 64.

Shell with the volutions reversed, and agreeing in every respect with the description of *Nautilus Becarii*. It cannot be considered as a *lusus*, because it is nearly as plentiful as *Becarii*.

3. *N. crassulus*, pl. I, f. 5.—First Edition, pl. 51, f. 5; Montagu, p. 191, pl. 18, f. 2; Walker, f. 70.

Shell strong, spiral, with numerous close-set elevated septa; sides compressed, similar, doubly umbilicated, within which, part of the interior volution is seen; aperture placed a little oblique, scarcely clasping the body, and provided with a siphon; colour cream white, sometimes brownish; size not more than half a line. Found at Reculver; very rare.

4. *N. umbilicatus*, pl. I, f. 8.—First Edition, pl. 52, f. 8; Montagu, p. 191, pl. 18, f. 1; Walker, f. 69.

Shell spiral, compressed, umbilicated on both sides, subpellucid, with nine or ten raised septa; aperture clasping the body volution almost equally on both sides, the interior volutions being hid. The most minute of all the Nautili, about the fourth of a line in size.

5. *N. deprussulus*, pl. I, f. 3.—First Edition, pl. 52, f. 3; Montagu, p. 190, pl. 18, f. 9; Walker, f. 68.

Shell spiral, with about nine visible septa, radiating from the centre in curved lines, distinguished by their opacity, but not embossed; sides similar; in the centre is a small pellucid spot, which may be mistaken for an umbilicus; the aperture does not clasp the body so much as that of the *N. calcar*, from which it also differs in being much more compressed, having no carina, and in the concamerations being more numerous, and being only about half the size.

6. *N. inflatus*, pl. I, f. 4.—First Edition, pl. 52, f. 4; Montagu, sup. p. 81, pl. 18, f. 3.

Shell spiral, with three lobed volutions; the first provided with five extremely ventricose articulations; anterior end subglobose; siphon situated as in *N. Becarii*. It is smaller, and less depressed than that shell, having only about half the number of articulations, which are much more tumid; colour opaque brown. Found among sand on the Devonshire coast: rare.

7. *N. laevigatus*, pl. I, f. 9, 10.—First Edition, pl. 52, f. 9, 10; Montagu p. 188, pl. 18, f. 7, 8; Walker, f. 67.

Shell spiral, with ten smooth, pale ferruginous brown, flexuous rays marking the septa, which are rather deeper in colour, a little raised and radiating from the centre; both sides are equally and considerably convex, declining towards the edge, which is rounded but not strictly carinated; aperture surrounded by a rim forming a triangle, so that the body is not intersected by the anterior end, but the volution is lost just below the margin of the first septum; thus differing from the *N. calcar*, whose body is much clasped by the margin of the anterior septum. Found at Sandwich and Seasalter, rare.

8. *N. calcar*, pl. I, f. 1, 2.—First Edition, pl. 52, f. 1, 2; Montagu, p. 189, pl. 15, f. 4; *N. rotatus*, Linnaean Transactions, VIII. p. 114.

Shell smooth, spiral, body volution with six articulations, defined by flexuous elevated striae, radiating from the centre, but do not quite reach the margin, which is provided with a strong carina; both sides of the shell equally convex, smooth, and more elevated in the centre; interior volutions invisible after entering the aperture, which is semi-cordate in shape, clasping the body equally on both sides, and provided with a small perforation; colour brown. Found on the Devonshire coast, but very rare.

9. *N. crispus*, pl. I, f. 6.—First Edition, pl. 52, f. 6; Montagu, p. 187, pl. 18, f. 5; Walker, f. 65.

Shell with lateral volutions, having about twenty flexuous, crenulated articulations in the exterior volution, defined by elevated striae; back carinated; interior volutions hidden; aperture semicordate, equal, lateral, clasping the body, and provided with a small siphon; glossy and pure white. Found at Sandwich, Sheppy Island, Teignmouth, and Salcomb, Devonshire; and at Weymouth and Swanage, Dorsetshire; also the south coast of Wales.

10. *N. carinatus*, pl. I, f. 7.—First Edition, pl. 52, f. 1; Montagu, p. 195; Walker, f. 72.

"An oblong carinated shell, with a narrow oval aperture; colour whitish, transparent like glass. From Seasalter and Sandwich; very rare." We have copied this, imperfectly figured and described, Shell from Walker. From the figure we should say that it belonged to the family *Spherulacea* of Lamarck.

#### FAMILY II.—LITUOLACEA.

Shell somewhat spiral, the last volution continuous in a straight line.

##### GENUS 2.—SPIROLINA.—*Lamarck*.

Shell multilocular, partly spiral, and discoid; volutions contiguous, the last terminating in a straight line; septa straight, perforated by a tube.

##### Subdivision I.—Convolute.

1. *S. subarcuata*, pl. I, f. 27.—First Edition, pl. 52, f. 27; *Nautilus subarcuatus*; Montagu, sup. p. 89, pl. 19, f. 1; Walker, f. 73.

Shell subarcuated, subconvolute, the straight part containing about five cells; the posterior half convolute; twelve visible concamerations, and very distinct; septa somewhat elevated; back carinated, and slightly indented at the division of the cells; anterior septa oblique, producing at the aperture a considerable slope from the back interiorly; front margin not carinated, but obtusely rounded; siphon, placed near the back.

2. *S. similis*, pl. I, f. 22.—First Edition, pl. 52, f. 22; *Nautilus similis*; Montagu, p. 196, pl. 19, f. 3.

Shell elongated, subarcuated, with elevated articulations; the septa provided with small elevated tubercles, a row of larger ones in the centre of the back; apex incurvated; aperture with a small produced siphon; colour opaque brown. Found at Sandwich and Sheppy Islands; rare.

##### Subdivision II.—Shells nearly straight.

3. *S. Legumen*, pl. I, f. 22, 23.—*Orthocera Legumen*.—First Edition, pl. 52, f. 22, 23; *Nautilus Legumen*; Montagu, sup. p. 82, pl. 19, f. 6, and A. Walker, f. 74.

Shell subarcuated, smooth, glossy, pellucid, white; slightly compressed, and a little tapering; the extremities rounded and somewhat contracted; anterior end surrounded by an oblique ridge, above which is an exerted siphon; with a considerable aperture near to the concave side; septa eight or nine in number, oblique, and visible through the shell; cells gradually decreasing in size towards the posterior end. Fig. 23 represents the aperture with the siphon. Length about an eighth of an inch; breadth about a sixth its length. Found in sand on the coasts of Kent and South Devon; very rare.

#### FAMILY III.—ORTHOCERATA.

Shell straight or nearly so, without any spiral volutions.

##### GENUS 3.—NODOSARIA.—*Lamarck*.

Shell elongated, erect, or smooth, and slightly arcuated, subconic, nodose, consisting of a series of spherical volutions; the transverse septa perforated.

1. *N. subarcuata*, pl. I, f. 18.—*Orthocera subarcuata*.—First Edition; *Nautilus subarcuatus*; Montagu, 198, pl. 6, f. 5.

Shell subcylindrical, subarcuated, with three distinct globose articulations at the superior end; the remaining divisions imperfectly defined, and abruptly

tapering to a point; aperture consisting of a small produced siphon; colour, when divested of its brown epidermis, pure white and glossy. Length one-tenth of an inch. Inhabits the sea at Sandwich.

2. *N. decemlocularia*.

Shell with ten distinct, nearly globular articulations; slightly arcuated, and ending in a long tapering articulation, in which the septa are hardly distinguishable; covered with a reddish-brown epidermis. Length a tenth and a half of an inch. We have received this from the south coast of Devon; but too late for insertion in the plate.

This is doubtless the same shell which Montagu considers a variety of *N. subarcuata*, which he had from Sandwich.

3. *N. radicula*, pl. I, f. 28.—*Orthocera radicula*.—First Ed., pl. 52, f. 28; *Nautilus radicula*; Montagu, p. 197, pl. 6, f. 4.

Shell subconic, elongated, with six subglobose deeply divided articulations; the upper one much larger than the others, and egg-shaped, smooth, opaque-brown, and the aperture provided with a small siphon, with the apex extended to a conic point. From Sandwich.

Montagu mentions varieties of this species, having from two to five articulations. We have not seen these, and therefore cannot speak concerning them. The following distinct species is only considered a variety by that able naturalist.

4. *N. octolocularia*, pl. I, f. 25.—*Orthocera radicula*.—First Ed., pl. 52, f. 25; *Nautilus radicula*; variety. Montagu, 198, pl. 14, f. 6.

Shell with eight round sub-compressed articulations, the superior one nearly spherical, with a small circular aperture in the apex; the remaining articulations gradually lessening, and the last one somewhat pyriform and pointed at its extremity. Colour cream white. Found at Sandwich and the south coast of Devon.

In our first edition we followed Montagu, in considering this only a variety of *N. radicula*.

5. *N. spinulosa*, pl. I, f. 26.—*Orthocera spinulosa*.—First Ed., pl. 52, f. 26; *Nautilus spinulosus*; Montagu, Sup. p. 86, pl. 19, f. 5.

Shell with three globose, deeply divided articulations, covered with spines, which incline to the posterior end; the superior bulb somewhat elongated, in the form of a siphon; colour pale chestnut.

Montagu mentions a variety of this shell, of which he possessed a drawing by Mr. Henry Boys, which was subarcuated and taper with eight articulations; which were rather tuberculated than spined. We would be inclined to consider this a distinct species, under the trivial name of *tuberculata*.

GENUS 4.—*ORTHOCERA*.—*Lamarck*.

Shell elongated, straight, or a little arcuated, subconical; generally ribbed, with longitudinal external grooves; chambers formed by transverse septa, perforated by a tube, which is either central or marginal.

*Subdivision I.—Ribbed.*

1. *O. costata*, pl. I, f. 17.—First Ed., pl. 52, f. 17; *Nautilus costatus*; Montagu, p. 199, pl. 14, f. 5.

Shell straight, subcylindrical, tapering slightly towards the posterior termination; with twelve convex articulations, each provided with four equidistant, strong longitudinal ribs, running continuously the whole length of the shell; aperture extended, in the form of a short conic siphon. Length a quarter of an inch. Found on the coast of Kent.

Montagu mentions a variety, with only six articulations, for the same locality.

2. *O. septemcostata*, pl. I, f. 24.—*O. costata*, variety, First Ed., pl. 52, f. 24; *Nautilus costatus*; Montagu, Sup. variety, p. 83, pl. 19, f. 2.

Shell nearly cylindrical, with five oblong-ovate articulations, each provided with seven ribs, running continuously the whole length of the shell; posterior end truncated, with the points of the ribs projecting beyond its margin; anterior end terminated by a slender cylindrical process as long as the first articulation, destitute of any opening, the aperture being situated at the truncated extremity.

Montagu mentions a variety with five articulations, and four ribs only.

3. *O. jugosa*, pl. I, f. 13.—First Ed., pl. 52, f. 13; Montagu, p. 198, pl. 14, f. 4.

Shell subarcuated, subcylindrical, tapering; with nine, ridged, subglobose, somewhat elongated articulations; aperture extended to a small conic siphon, the extreme joint at the interior end rather longer than the contiguous ones; colour opaque-brown. Length a little more than an eighth of an inch. The ridges do not extend quite to the top of the articulations.

4. *O. bicarinata*.—*Nautilus bicarinatus*.—Montagu, Sup. p. 86.

Shell arcuated, subcylindrical; with eleven subglobose, bicarinated articulations, or furnished with a slight longitudinal rib along the arc, and another on the opposite side; the larger end terminated by a produced siphon; the articulations gradually decrease towards the posterior end, which is rounded; length an eighth of an inch; diameter at the largest part about the same. Found at Sandwich.

5. *O. linearis*, pl. I, f. 14-15.—First Ed., pl. 52, f. 14-15; *Nautilus linearis*; Montagu, Sup. p. 87, pl. 20, f. 9.

Shell straight, a little compressed, linear, slightly tapering; provided with

numerous longitudinal ribs, which take an oblique direction, and scarcely extend half the length of the shell. It is of a glossy, smooth, and pellucid white, except along the sides, and at the divisions of the cells, where it is opaque; there are about fourteen slightly oblique, and not quite regular septa; anterior extremity smooth, and terminating by a produced siphon; posterior end rounded. Length nearly a quarter of an inch, breadth about an eighth of its length. Found on the shell-bank at Dunbar, Frith of Forth.

*Subdivision II.—Destitute of Ribs.*

6. *O. recta*, pl. I, f. 16, 19, 20.—First Ed., pl. 52, f. 16, 19, 20; Montagu, p. 197, and Sup. p. 82, pl. 19, f. 4 and 7.

Shell straight or very slightly arcuated, with perfectly smooth, slightly divided articulations; tapering a little to the posterior termination; aperture situated in a small produced siphon at the anterior extremity. Found at Sandwich; very rare.

FAMILY IV.—*SPHERULACEA*.

Shell globular, spheroidal, or oval; with the volutions mutually enveloping, or the cells contiguous, and forming a tunie.

GENUS 5.—*BILOCULINA*.—*D'Orbigny*

Shell ovate-globose, with two transverse cells, involving the axis

1. *B. oblonga*, pl. LVI, f. 38-39.—*Lagena oblonga*.—First Ed., pl. I, f. 38-39; *Vermiculum oblongum*; Montagu, p. 522, pl. 14, f. 9.

Shell oblong, oval, somewhat compressed; with a longitudinal suture on one side, which divides the shell into two parts; on the opposite side the middle compartment is surrounded by a faint depression, which separates it from the exterior one, and is more elevated, aperture oval, slightly produced, with a yellow margin; general colour opaque, glossy white. Length not half a line. Found in sand from Salecomb Bay, Devonshire; rare.

2. *B. elliptica*, pl. LVI, f. 23.—*Miliola elliptica*.—First Ed., pl. I, f. 23.

Shell elliptical, a little compressed, clear, smooth and glossy; the internal chambers shining through, giving it the appearance of being externally grooved; size not a line. Found at Dunbar by General Bingham.

3. *B. lactea*, pl. LVI, f. 28.—*Miliola lactea*.—First Ed.; *Vermiculum lacteum*; Montagu, p. 522; *Serpula tenuis*; Walker, f. 5.

Shell thin, smooth, glossy, egg-shaped, slightly compressed; pellucid, with milk-white veins. Length half a line. Coast of Devonshire.

4. *B. marginata*, pl. LVI, f. 25.—*Renoidea marginata*.—First Ed., pl. I, f. 25. *Vermiculum marginatum*; Montagu, p. 524; Walker, pl. I, f. 7.

Shell globular, a little compressed, surrounded by an elevated zone; colour white, transparent and glossy. Size not half a line. Found at Reculver, and on the coast of Devon; very rare.

GENUS 6.—*TRILOCULINA*.—*D'Orbigny*.

Shell generally ovate-globose, with three transverse cells involving the axis.

1. *T. glabra*, pl. LVI, f. 20-21.—*Renoidea glabra*.—First Ed., pl. I, f. 20-21.

Shell nearly circular, three lobed, the two external ones longest, and involving the third; smooth, transparent and glossy. Size about a line. Found at Dunbar by General Bingham; rare.

2. *T. rotundata*, pl. LVI, f. 14-15.—*Renoidea rotundata*.—First Ed., pl. 1, f. 14-15.

Shell perfectly globular, smooth, shining and transparent; milky white, with three lobes, the external ones largest. Size not a line. Found at Dunbar by General Bingham; very rare.

3. *T. bicornis*, pl. LVI, f. 24.—*Miliola bicornis*.—First Ed. pl. 1, f. 24. *Serpula bicornis*; Montagu p. 519.

Shell three chambered, the middle one small, the outer ones rounded, considerably larger, and investing it on one side, and longitudinally striated on the longer side from the aperture, which is contracted; mouth small, orbicular; colour opaque; white. Length one line. Found at Sandwich and Reculver.

4. *T. perforata*, pl. LVI, f. 26.—*Miliola perforata*.—First Ed. pl. 1, f. 26.—*Vermiculum perforatum*; Montagu, p. 519.—*Serpula bicornis*; Walker, f. 3.

Shell three chambered; central compartment flat, thin, and perforated, with a semilunar disc on one side, and a larger curved chamber on the other; colour white, opaque, and glossy. Found at Sandwich and Cornwall; very rare.

5. *T. striata*, pl. LVI, f. 27.—*Miliola striata*.—First Ed. pl. 1, f. 27.

Shell with three compartments, the two outer ones investing the others; the whole are longitudinally striated; yellowish white; not a line in length. Found at Belton sands, near Dunbar, by General Bingham.

6. *T. minuta*, pl. LVI, f. 18-19.—*Miliola minuta*.—First Ed. pl. 1, f. 18-19.

Shell three chambered, the middle one flat on one side, and raised on the other; it is entirely invested by the outer valves, one of which is slender, and the other broad, and tapering, with three or four strongly marked longitudinal striae; size about half a line. Found at Dunbar by General Bingham.



striae. Length three-eighths of an inch, breadth about an inch; colour pale chestnut brown. We found this off St. Abb's Head, Frith of Forth.—In our own Cabinet.

13. *F. crassus*, pl. V, f. 8-9.—First Ed., pl. 48, f. 8-9.

Shell thick, strong, smooth, fusiform; spire consisting of five volutions, abruptly tapering to rather an obtuse apex; with ten nearly straight, smooth, longitudinal, white ribs, which do not reach the base in front; body and spire nearly of equal length; aperture elongated, radiform, much narrowed both above and below; outer lip plain, inner lip slightly reflected on the columella; colour white, with a very broad dark chestnut spiral belt, girdling the centre of the body, and extending to the apex, at the base of the volutions. Length nearly half an inch, breadth not half its length. We found this species at Prestonpans, near Edinburgh.—In Lady Jardine's Cabinet.

14. *F. attenuatus*, pl. V, f. 37-38.—First Ed., pl. 48, f. 37-38; Montagu p. 266, pl. 9, f. 6.

Shell very fusiform, slender, consisting of eight volutions; spire as long as the body, tapering very abruptly to a fine point; the volutions well defined by the suture; with nine equidistant, strong, elevated, smooth, longitudinal arcuated ribs, rising in the middle of each volution; lower part of the body much attenuated; aperture narrow, considerably contracted at the canal, which is long and straight; outer lip thickened at the back by a rib; inner lip plain; colour pale yellowish white. Length half an inch, breadth little more than an eighth. Found in sand at Falmouth Harbour, Biddeford Bay, South Wales, and at Dunbar.

15. *F. gracilis*, pl. V, f. 16-17.—First Ed., pl. 48, f. 16-17; *Murex gracilis*; Montagu, p. 267, pl. 15, f. 5; *Murex emarginatus*; Donovan, pl. 169, f. 2.

Shell fusiform, slender; body and spire of equal length, tapering to a fine point; volutions ten, with eleven or twelve rather close, longitudinal, convexly arcuated ribs, which do not continue throughout the shell, but are separated at the suture of the spire by a flat space, at which point the striae are uninterruptedly continued spirally throughout the shell; the whole shell crossed by numerous striae; the ribs do not extend to the base of the body, where the striae are stronger and more distant; canal moderately long, ascending; outer lip a little spread, margin arcuated; inner lip very slightly thickened; colour purplish brown. Length, seven-eighths of an inch, breadth two-eighths. Found in Biddeford Bay, Devonshire, at Tenby, Wales, and in Dublin Bay.

16. *F. Nebula*, pl. V, f. 10.—First Ed., pl. 48, f. 10; *M. Nebula*; Montagu, p. 267, pl. 15, f. 6; *Murex acuminatus*; Pennant, IV, pl. 79.

Shell with taper, costated volutions, terminating in a sharp pointed apex; longitudinally and spirally striate, giving it a reticulated appearance as if covered with gauze; volutions rather depressed, scarcely elevated above the ribs; the suture very fine; aperture narrow, oblong-oval, the canal turning a little to the one side; outer lip sharp; inner lip replicate, smooth, glossy; colour various, sometimes yellowish white, at others pale brownish, purplish, or rufous; but the most beautiful variety is of a bluish colour, with the decussated striae white. Length half an inch, breadth two-tenths. Found at Falmouth, the south coast of Devonshire, particularly at Biddeford Bay, Tenby, and Laugharne, Wales, Portmarnock, and Dublin Bay, Ireland.

17. *F. septangularis*, pl. V, f. 11.—First Ed., pl. 48, f. 11.

Shell with seven or eight taper, longitudinally ribbed, strong volutions, terminating in an acute apex; the ribs are seven in number, running from the base to the tip of the spire, scarcely interrupted by the suture; the intermediate spaces are but moderately concave, which gives the shell a heptagonal appearance; aperture oblong-oval, ending in a short canal; outer lip sharp at the edge, thickened at the back by a ridge, the upper part contracted to an angle, where the margin is a little indented; pillar lip somewhat replicated; colour purplish brown, and somewhat glossy. Found at Falmouth, Salcomb Bay, Weymouth, and the south coast of Devonshire.

18. *F. accinctus*, pl. V, f. 14-15.—First Ed., pl. 48, f. 14-15; *Murex accinctus*; Montagu, Sup. p. 114.

Shell taper, with six or seven costated volutions; the ribs are slightly angulated, or more elevated in the middle of each volution, with fine spiral striae; aperture oblong; canal short; lip entire at the upper angle; colour yellowish white, with an obsolete brown band in the middle of the body, which continues up the spire of the shell, at the base of each volution; this band, when examined with a lens, is observed to be constituted of four or five contiguous thread-like lines of a brown colour, in the depressions between the striae. Length four lines; breadth one line. Found in the Frith of Forth by Captain Laskey.

19. *F. rufus*, pl. V, f. 47-48.—First Ed., pl. 48, f. 47-48; *Murex rufus*; Montagu, p. 263. Maton and Racket, Linn. Trans., VIII, p. 144.

Shell taper, fusiform; spire consisting of five volutions; fifteen or sixteen longitudinal ribs extend from the base to the apex, the whole shell covered with very fine spiral striae; aperture narrow, oblong, terminating in a short canal; outer lip smooth, rarely thickened by a rib; pillar lip smooth, covered by the ribs; colour pale rufous brown, sometimes chestnut. Length three-tenths of an inch; breadth one-eighth. Found at Sandwich, Biddeford Bay, Devonshire, Dorsetshire, coast of Wales, and Portmarnock, Ireland.

20. *F. proximus*, pl. V, f. 34.—First Ed., pl. 48, f. 34. Montagu, Sup. p. 118, pl. 30, f. 8.

Shell thick, white, with six strongly costated volutions; apex moderately pointed; aperture ovate-oblong; outer lip remarkably broad, and reflexed; the canal short, and rather spreading at the end. Length nearly half an inch.

This figure and description are taken from Montagu, who says, "This shell might readily be mistaken for an extraordinary growth of *Murex* (*Fusus*) *costatus*, but it differs materially from that species in the number of ribs, being possessed of eleven on the body or lower volution, whereas the *costatus* never has more than eight, and usually only seven, and these are broader." Found by Captain Laskey, on Tynningham Sands, near Dunbar.

We have not been able to identify this with any of the species met with in the Frith of Forth; it differs from them all in the shortness of the aperture, in proportion to the length of the body; in this respect the nearest approach to it is the following:—

21. *F. Albus*, pl. V, f. 61-62.—First Ed., pl. 48, f. 61-62.

Shell white, fusiform; spire consisting of five abruptly-tapering volutions, with ten longitudinal smooth ribs; the interstices with very fine, close-set spiral striae; apex smooth; aperture oblong, terminating in a very short canal; outer lip thickened, smooth; pillar lip smooth. Length three-eighths of an inch; breadth about an eighth. Found at Dunbar by General Bingham. Very rare.

22. *F. purpureus*, pl. V, f. 25.—First Ed., pl. 48, f. 25; *Murex purpureus*; Montagu, p. 260, pl. 9, f. 3; Maton and Racket, Linn. Trans., VIII, p. 143.

Shell strong, very rugose; spire with eight or nine rounded volutions, tapering to an extremely fine sharp point; nineteen or twenty longitudinal, somewhat oblique ribs, traverse the shell, crossed by numerous sharp elevated ridges, which rise into angles upon the ribs, producing sharp protruding knobs, giving the shell a cancellated appearance, and feeling very rough to the touch; aperture narrow, oval, terminating in a straight canal; outer lip thin, exteriorly tuberculate, internally striate, and crenated; columella destitute of ribs, obliquely striated transversely, and slightly tuberculate; inside purple, marked by the ribs; generally of a deep purple or brownish purple. Length five eighths of an inch; breadth a quarter of an inch. Found at Salcomb, Devonshire, Tenby, Wales, and Portmarnock, Ireland.

This is one of the most elegant of our British univalves.

23. *F. punctatus*, pl. V, f. 56-57.—First Ed., pl. 48, f. 56-57.

Shell fusiform, strong, thick, somewhat turreted; spire with five slightly defined volutions; body long; the whole shell covered with many regular series of square and deep punctures, like those of a thimble; external surface smooth, yellowish white; aperture oblong-ovate, acute above, ending in a very short canal interiorly punctated; outer lip thickened, slightly tuberculate on its edge; pillar lip punctated like the rest of the shell. Length nearly three-eighths of an inch; breadth an eighth and a half. We found this pretty shell at Holy Island, coast of Northumberland.—In Lady Jardine's Cabinet.

24. *F. subnigris*, pl. V, f. 58-59.—First Ed., pl. 48, f. 58-59.

Shell fusiform, spire consisting of five well defined volutions, abruptly tapering to a point, and terminating in an obtuse apex; ten thick longitudinal ribs traverse the whole shell, crossed by strong distant striae, producing a cancellated appearance; aperture ovate, ending in a very short canal; outer lip smooth, thickened; base of columella smooth; colour very dark reddish brown, approaching to black in some specimens. Length three-tenths of an inch; breadth about an eighth of an inch. We first discovered this species at St. Cyrus, Kincardineshire; and it was subsequently sent to us by our late friend General Bingham, who found it plentifully on *Fuci*, at Penzance, Cornwall.

25. *F. turriculus*, pl. V, f. 51-52.—First Ed., pl. 48, f. 51-52. Montagu, p. 262, pl. 9, f. 5; Maton and Racket, Linn. Trans., VIII, p. 144.

Shell fusiform, turreted; spire occupying about a third of the shell, with six or seven volutions, terminating in an acute apex; volutions strongly defined, flattened or cylindrical, rising above each other perpendicularly, the top of each being almost quite flat, the whole shell covered with numerous, rather thin, longitudinal ribs, which suddenly decline towards the suture, on the depressed top of each volution, the interstices with very fine close-set spiral striae; body sub-cylindrical, abruptly acuminate beneath; aperture oblong-ovate, terminating in a rather long, somewhat oblique broad canal; outer lip thin, sometimes thickened by a rib a little angulated towards the top, produced by the spiral depression; inner lip smooth, glossy, and white, very broadly reflected on the columella; colour cream white. Length three quarters of an inch; breadth rather more than a quarter. Found at Sandwich, Kent; Biddeford Bay, Devonshire; Tenby and Laugharne, Wales; Frith of Forth, and Portmarnock, Ireland.

26. *F. decussatus*, pl. V, f. 53 and 55.—First Ed., pl. 48, f. 53 and 55.

Shell fusiform; spire short, consisting of five well rounded abruptly tapering volutions, separated by a deep suture, and little more than a third the length of the body; twelve strong longitudinal ribs cover the shell from the venter to the apex, crossed by distant strong spiral striae, giving the shell a cancellated appearance; body abruptly acuminate beneath; aperture sub-ovate, terminating in a very long narrow and pointed canal, equal in length to the body, the opening in front being very straight; outer lip somewhat thickened and entire, and continuous along the columella, on which it is narrowly reflected; colour cream white. Length one inch five-eighths; breadth an inch. We found this shell at Killough, county of Down, Ireland.

27. *F. Bamffius*, pl. VI, f. 1 and 4.—First Ed., pl. 47, f. 1 and 4; *Murex Bamffius*; Montagu, Sup. p. 117; Donovan, V, pl. 169, f. 2; Maton and Racket, Linn. Trans., VIII, p. 149.

Shell fusiform, spire consisting of six well-defined, ventricose, and abruptly tapering volutions; with about sixteen longitudinal sharp, somewhat oblique,

elevated ribs, covering the whole shell; aperture oblong, terminating in a rather lengthened, slightly twisted, canal; outer lip white, a little reflected entire, and continuous; inner lip white, broadly reflected on the columella; colour cream white, yellowish, or flesh-colour; the inside in some specimens of a beautiful rosy hue; length five-eighths of an inch. Found at Banff, and is not uncommon in the Frith of Forth, adhering to Fuci.

Young shells are covered with a fine yellowish brown epidermis.

28. *F. asperinus*, pl. VI, f. 2.—First Ed., pl. 47, f. 2; Leach's MS.

Shell turreted; spire with seven abruptly tapering volutions, deeply divided by the suture; apex acute; with thirteen strong longitudinal ribs, crossed by sharp, elevated, wide-set, transverse striæ, giving the shell a cancellated appearance, and where the striæ cross the ribs, they produce sharp protruding knobs; aperture oblong-ovate, ending in a long slightly twisted, nearly closed canal; outer lip sharp at the edge, but thickened behind, by a tuberculate rib; columella smooth and obliquely striate; colour yellowish-white; length half an inch, breadth not quite a quarter. Found on the Dorsetshire coast by Mr. Prideaux, and in the Cabinet of Dr. Leach, British Museum.

29. *F. elegans*, pl. VI, f. 3.—First Ed., pl. 47, f. 3; Leach's MS.

Shell strong, fusiform; spire with eight volutions, divided by a narrow, elevated belt, tapering to an acute point, and nearly equal in length to the body; with twelve broad, depressed, longitudinal, somewhat oblique ribs; crossed by fine, thick-set, brown lines, giving it the appearance of being striated; body abruptly acuminate; aperture oblong-ovate, terminating in a wide, spreading, straight canal of medium length; outer lip strong, slightly reflected, and rising somewhat abruptly from the body above, inner lip white, narrow, and transversely lineated below; colour pale fawn, with a transverse burnt sienna-coloured band, on the body, parallel with the upper margin of the aperture. Length half an inch; breadth not a quarter. Found on the Devonshire coast, and in the Cabinet of Dr. Leach, British Museum.

30. *F. antiquus*, pl. VI, f. 8.—First Ed., pl. 47, f. 8, Lamarck, VII, p. 125, No. 11; *Murex antiquus*; Brown in Ency. Brit. VI, p. 488; *Murex despectus*; Montagu, p. 256; Donovan, IV, pl. 119; Pennant, IV, No. 78.

Shell strong; spire short, consisting of seven or eight ventricose, well defined volutions, abruptly tapering to a sharp apex; body large, acuminate beneath; the whole shell with numerous somewhat undulating spiral striæ, crossed by faint, nearly obsolete, longitudinal striæ, or lines of growth; beak with strong pleats behind; aperture sub-oval, ending in a canal of medium length; outer lip plain, entire, smooth, and slightly reflected in perfect specimens; pillar lip broadly reflected on the columella; colour yellowish-white, pale fawn, ferruginous, or greyish-brown; inside white in some specimens, and yellow-orange in others. Length varying from four to five inches.

The magnificent specimen from which we drew our figure was taken, in deep water, in the British Channel, off Liverpool, by William Nicol, Esq., Edinburgh, and is in his Cabinet; it measures six inches and three-eighths in length.

This shell is found on most of the British coasts, in deep water. It is also abundant in the sea around Ireland.

This species varies much in its proportions in different localities. Those of the German Ocean, and whole eastern line of the British coasts are longer and narrower than those of the Irish Channel, and western coasts of Scotland, the body of the latter being larger in proportion to the length of the spire, and also much broader. We give the following measurements, which will be found to represent their prevailing proportional dimensions. The specimen from which we figured our illustration, from the Irish Channel, was in length  $6\frac{1}{4}$  inches; breadth  $3\frac{1}{2}$ ; length of aperture from the base of the canal  $4\frac{1}{2}$ ; width from the pillar lip to the outer lip  $1\frac{1}{2}$ ; length of lower volution of spire from the top of the aperture  $1\frac{2}{3}$ ; of the remaining volutions  $1\frac{2}{3}$ ; breadth of the body 3 inches. A specimen from Hartlepool, county of Durham, length  $6\frac{1}{2}$  inches; breadth  $3\frac{1}{2}$ ; length of aperture  $3\frac{3}{4}$ ; breadth of do.  $1\frac{2}{3}$ ; length of lower volution of the spire,  $\frac{7}{8}$ ; from lower volution to the top of spire  $2\frac{1}{4}$  inches.

31. *F. Turtoni*, pl. VII, f. 1; Bean in Loudon's Journal, VII, p. 493, f. 61.

Shell fusiform; spire consisting of eight well defined, acuminate, abruptly tapering volutions; covered with slightly elevated spiral lines, broader than intervening spaces, and crossed by numerous longitudinal lines of growth; the volutions are a little tumid in the middle, from which they gradually slop to the suture; aperture ovate, nearly the same length as the spire, terminating in a very short and wide canal; outer lip a little dilated and very thick; inner lip smooth, glossy, and broadly reflected on the columella; colour white, covered with a brown epidermis; inside pale violet. Length four inches and a half; breadth about two inches. Found among the rejectamenta of a fishing-boat at Scarborough, by William Bean, Esq., and in his Cabinet. A represents the operculum.

This shell has much the aspect of *F. antiquus*, and is probably only an elongated *lusus* of that species.

32. *F. carinatus*, pl. VI, f. 10 and 13.—First Ed., pl. 47, f. 10 and 13; Lamarck, VII, p. 126, No. 13; *Murex carinatus*; Pennant, IV, pl. 77, f. 96; Donovan, IV, pl. 109; *Murex antiquus*; Montagu, p. 559.

Shell strong; spire turreted, consisting of seven volutions, the centre of each rising into a strong, undulated, carinated ridge, and all deeply divided by the suture; body and spire with wide, undulating, depressed, longitudinal ribs; crossed by waved, spiral striæ; aperture oval, terminating in a long

canal; outer lip even except where the ridges terminate; inner lip smooth; inside livid white; external colour pale brown. Length three inches and a half.

Figs. 31, 32, and 33, are supposed by Captain Laskey to be the young of this shell. He says he found it on the coast near Dunbar. We do not think that it agrees with the *F. carinatus*.

Said to be found in Scotland, but we consider this very doubtful as a British species.

33. *F. corneus*, pl. VI, f. 7 and 9.—First Ed. pl. 47, f. 7 and 9; *Murex corneus*; Montagu, p. 258; Donovan, II, pl. 38; Pennant, IV, pl. 76, f. 99.

Shell strong, fusiform; spire consisting of seven tapering, well defined volutions; with distant spiral striæ, and slightly wrinkled longitudinally; aperture oblong-oval, terminating in a long somewhat oblique canal; with a few transverse wrinkles at the point of the beak behind; outer lip smooth; inner lip broadly reflected on the columella; live shells are usually covered with a brown epidermis, beneath which they are white. Length three inches; breadth one inch and a quarter.

Figs. 11 and 12 represent a variety, with the spire, body, and canal shorter; the whole shell of greater proportional breadth than usual, and with striæ much closer and more regular; measuring two inches and an eighth in length, and an inch in breadth. It was found at Seaton, Northumberland, by Walter C. Trevelyan, Esq., and is in the Cabinet of Sir John Trevelyan, Bart. at Wallington.

The *F. corneus* is plentiful on the Northumberland and Yorkshire coasts, Essex, the Irish Sea, and Frith of Forth.

34. *F. gyrrinus*, pl. V, f. 12-13.—First Ed. pl. 48, f. 12-13; Montagu, Sup. p. 170; Martini, IV, pl. 128, f. 1231-1232.

Shell strong, short, conic, considerably tumid; spire consisting of three volutions, each covered with three rows of tubercles; on the body there are eight rows of tubercles; colour dark chestnut brown. Length scarcely a quarter of an inch; breadth one-eighth. Found at Nun's Island by Captain Laskey.

35. *F. minutus*, pl. V, f. 18 and 24.—First Ed., pl. 48, f. 18 and 24.

Shell sub-fusiform; spire short, consisting of five short, rounded, and deeply divided volutions, terminating in an obtuse apex; body nearly four times the length of the spire in front, obliquely depressed above, from whence it tapers to its base; the body and two lower volutions of the spire provided with fourteen longitudinal, strong ribs, which suddenly decline towards the suture; those of the body are thickest at top, and gradually become thinner as they descend to the base behind, but only reach the venter or middle of the aperture in front; the whole shell covered with very fine spiral striæ; aperture oblong, ending in a short wide canal; outer lip thin, smooth, continuous, abruptly rising from the body above; inner lip slightly reflected on the columella; colour pale chestnut, with a broad, reddish brown, transverse band on the centre of the body, the depression on the upper part of the body, and the top and bottom of each volution with a fillet of the same colour. We discovered this species in Lough Strangford, Ireland—It is in Lady Jardine's Cabinet.

#### GENUS 13.—PLEUROTOMA.—Lamarck.

Shell turreted or fusiform, terminated below by a straight canal, more or less long; aperture with a fissure or notch at the upper part.

1. *P. sinuosa*, pl. V, f. 40.—First Ed., pl. 48, f. 40; *Murex sinuosus*; p. 264, pl. 9, f. 8; Maton and Racket, in Linn. Trans., VIII, p. 143.

Shell strong, thick, white; six longitudinal, slightly raised volutions, tapering to a fine point; with seven strong, elevated, arcuated ribs, which do not quite extend to the upper part of the volutions, in each, separated only by a fine thread-like line; the whole shell finely and regularly spirally striated, less conspicuous on the ribs, but well defined in the interstices between them; aperture oblong-oval, narrow; canal short, greatly contracted; outer lip smooth, slightly thickened by a rib, and with a deep sinus at its upper angle; pillar lip replicated on the columella. Length three quarters of an inch; breadth a quarter. Found at Weymouth. Very rare.

2. *P. reticulata*, pl. V, f. 29-30.—First Ed., pl. 48, f. 29-30.

Shell sub-fusiform; spire turreted, consisting of four deeply defined volutions, abruptly tapering to a sharp apex; with from fourteen to eighteen longitudinal, close-set ribs, extending from the apex to the venter in front, but to nearly the base in rear; whole shell crossed by strong spiral striæ, giving it a reticulated appearance; aperture oblong, narrowed at each extremity, and ending in a very short canal; outer lip sharp at the margin, slightly inflected, and with a sinus at its upper angle; pillar lip smooth; inner lip rather broadly reflected on the columella; colour pale brown. Length quarter of an inch; breadth an eighth. Found at Greenock by Stewart Ker, Esq.

#### GENUS 14.—CERITHIUM.—Bruguiera.

Shell turreted; aperture oblong, oblique, terminated at the base by a short, truncated, recurved canal, without a notch; the outer lip with a groove at its upper extremity; aperture provided with a horny operculum.



## Subdivision I.—Volutions dextral.

1. *C. costatum*, pl. V, f. 26.—First Ed., pl. 48, f. 26; *Strombus costatus*; Montagu, p. 255; Maton and Racket, in Linn. Trans., VIII, p. 142; Donovan, pl. 94; *Cerithium costatum*; Fleming, Brit. An., p. 357.

Shell slender, tapering from the base to the apex; having ten or eleven volutions provided with numerous fine, close-set ribs; an elevated spiral line separating the volutions, and becoming double at the base of the shell, and lost in the upper part; aperture suborbicular; outer lip a little expanded; inner lip smooth, ending in a sub-canal; colour dark reddish brown, or deep chestnut. Length rather less than half an inch. Found on the coast of Cornwall, and Milton Sands, Devonshire. Rare.

2. *C. minutum*, pl. V, f. 27.—First Ed., pl. 48, f. 27; *Strombus turboformis*; Montagu, Sup. p. 110, pl. 30, f. 7; *Cerithium turbiforme*; Fleming, Brit. An., p. 357.

Shell slender; with seven flattened, ribbed, well defined volutions, tapering from the base to the apex, which is obtuse; base smooth; aperture suborbicular, ending in a very short canal; outer lip a little thickened at the margin; colour pale rufous brown; mouth nearly white. Length rather more than a quarter of an inch, breadth at the base one-third its length. Found on the shores of Nun's Island in the Hebrides, by Captain Laskey.

This is not the young of *C. costatum*.

3. *C. tuberculatum*.—*Murex tubercularis*.—Montagu, p. 270; and Sup. p. 116; Maton and Racket, Linn. Trans., VIII, p. 150; *Terebra tubercularis*; Fleming, Brit. An., p. 346.

Shell with nine or ten volutions, tapering from the base to a pointed apex, separated only by a slight depression, each volution provided with three rows of equal sized tubercles; aperture small, oval, ending in a canal, somewhat inclosed by the columella turning inward; colour chestnut brown. Length a quarter of an inch. Found sparingly at the mouth of the river Ann, Devonshire, Sandwich, and Dunbar.

4. *C. fuscum*, pl. V, f. 67.—*Murex fuscatus*.—Montagu, p. 269, *Turbo tuberculata*; Pennant, pl. 82, f. 111; *Terebra fuscata*; Fleming, Brit. An., p. 346.

Shell tuberculate, with ten or twelve volutions, tapering from the base to an acute apex; three or four series of crenulated spiral striae, between the tuberculated spiral ridges; aperture small, oval, ending in a slight canal; base spirally striate; colour yellowish brown. Length about an inch and a half. Found at Weymouth, and coast of Northumberland. Very rare.

5. *C. reticulatum*, pl. V, f. 63.—First Ed., pl. 48, f. 63; *Murex reticulatus*; Montagu, p. 272; Maton and Racket, Linn. Trans., VIII, p. 150; *Strombiformis reticulatus*; Da Costa, p. 117, pl. 8, f. 3; *Terebra reticulata*; Fleming, Brit. An., p. 346.

Shell strong, slender, tapering from the base to the apex; which terminates in a very fine point; eleven or twelve volutions, each furnished with four spiral ridges, intersected by narrow furrows, running a little oblique, producing a strongly reticulated appearance over the whole shell; volutions separated by a small suture; aperture oval, angulated above, ending below in a little contracted, slight canal; outer lip thin, somewhat indented by the spiral ridges; pillar lip replicated; base not reticulated; colour rufous brown. Length five-eighths of an inch, breadth rather more than one-eighth.

Common on the coast of Cornwall, plentiful in Falmouth harbour, and on the Devonshire, Dorsetshire, Kentish, and Welsh coasts.

6. *C. minutissimum*.—*Murex minutissimus*; Montagu, p. 273; Adams, Linn. Trans., III, p. 65; Turton's Linné, IV, p. 460.

Shell with five spiral, striated volutions; ribs remote; beak closed. A minute, elegant, and pellucid shell from the coasts of Pembrokeshire.

We give the above imperfectly described species on the authority of Adams, as we have not seen the shell.

## Subdivision II.—With the volutions of the spire reversed.

7. *C. adversum*, pl. V, f. 66.—*Cerithium tuberculatum*.—First Ed., pl. 48, f. 66; *Murex adversus*; Montagu, p. 271; Donovan, pl. 159; Maton and Racket, Linn. Trans., VIII, p. 151; Fleming, Brit. An., p. 347.

Shell tapering from the base to the apex; with ten or eleven imperfectly defined, reversed, tuberculated volutions, ending in a fine point; each volution furnished with three series of tubercles, the middle row smaller than the others; aperture oval, terminating in a straight canal; base with two or three smooth spiral ridges; colour opaque, light hair brown. Length three-eighths of an inch, sometimes, though rarely, half an inch; breadth not quite one-eighth. Found at Weymouth, and sparingly on the Cornish and Devonshire coasts.

8. *C. cancellatum*, pl. V., f. 64.—*C. adversum*.—First Ed., pl. 48, f. 64.

Shell with eleven reversed, slightly defined volutions, tapering from the base to an obtuse apex; each volution provided with four rows of spiral, depressed tubercles, producing a fine cancellated appearance. These tubercles do not extend lower down than the upper margin of the aperture in front, and in a spirally parallel direction behind; aperture triangular, pointed beneath, ending in a compressed, closed, short canal; colour raw umber brown. Found on the Northumberland coast at Holy Island.

## SECTION II.—PHYTIPHAGA.

Destitute of a projecting syphon, and usually respiring by an orifice; provided with jaws, and feeding upon vegetables; shell with the aperture entire, and without any notch or canal.

## GENUS 15.—TURRITELLA.—Lamarck.

Shell turreted or conoid, with the aperture rounded or oblong, not expanding, and the margin disunited.

1. *T. terebra*, pl. VIII, t. 56.—First Ed., pl. 51, f. 56; Lamarck, VII, p. 56; *Turbo terebra*; Montagu, p. 293; Donovan, I, pl. 22, f. 2; Pennant, IV, pl. 81, f. 113; Fleming, Brit. An., p. 302.

Shell extremely taper, greatly elongated, with from twelve to sixteen well rounded and deeply divided volutions, terminating in an acute apex; three spiral, sharp, elevated ridges traverse the shell from the lower margin of the body to the apex, in the middle of the volutions, the centre one being most raised; the whole shell is covered with numerous close-set, spiral striae, crossed by extremely minute, very thick-set, longitudinal, waved striae, hardly perceptible without the aid of a lens; colour light brown, reddish brown, or sometimes clouded; aperture orbicular; outer lip thin, but not continuous; base flattened, concentrically wrinkled, and striate. Length varying from an inch and a half to two inches, breadth of base from three and a half to five-eighths of an inch. Inhabits the Devonshire, Welsh, Manx, Irish, Northumberland, and Durham coasts, and is not uncommon in the Frith of Forth, and other parts of Scotland.

2. *T. minor*, pl. VIII, f. 57-58.—First Ed., pl. 51, f. 57-58.

Shell acute; with fifteen well defined, rounded, somewhat short volutions, tapering to a sharp point, covered with very fine, regular, spiral striae; aperture subrotund; outer lip thin. Length three-eighths of an inch, breadth not an inch. Found on the coast of Tenby, Wales, by George Lyons, Esq., Tenby, and in his Cabinet.

## GENUS 16.—PHASIANELLA.—Lamarck.

Shell oval or conical, solid; aperture entire, oval, longer than broad, the margin disunited above; outer lip acute at the edge, and not reflected; columella smooth, attenuated with a slight salient angle at the base, and a calcareous or horny operculum.

1. *P. pullus*, pl. X, f. 42.—First Ed., pl. 46, f. 42; *Turbo pullus*; Montagu, p. 319; Donovan, I, pl. 2, f. 2-6; *Turbo pictus*; Da Costa, p. 103, pl. 8, f. 1-3; *Cingula pulla*; Fleming, Brit. An., p. 308.

Shell with four or five well-rounded, smooth, glossy volutions; the body large, being as long as the spire; apex rather obtuse; aperture suborbicular, large, and in old shells spreading on the columella; colour extremely variable, more or less streaked and spotted with pink or purple, with dark undulated lines; or flesh-coloured spotted with white; sometimes purplish-brown with white spots. Montagu mentions a variety which is very finely lineated, and having the appearance of being striate, and others with broad lines, intersected with interrupted bands. Length three-eighths of an inch, breadth half its length.

The foot of the animal is furnished with a strong, thick, very convex and glossy operculum.

Not uncommon on the coasts of Whitsand Bay and Falmouth, Cornwall; at Milton Sands and Ilfracomb, Devonshire; at Weymouth, Dorsetshire; and Portmarnock, Ireland.

2. *P. vinctus*, pl. X, f. 46.—First Ed., pl. 46, f. 46; *Turbo vinctus*; Montagu, p. 307; Maton and Racket, Linn. Trans., VIII, p. 167.

Shell conic, with six rounded, smooth, sub-pellucid, horn-coloured volutions; the body provided with four or five purplish-brown, or chestnut-coloured bands; a broad space divides the three lower and upper ones; the second and third volutions of the spire having only two zones; apex small, somewhat obtuse; aperture suborbicular; outer lip very thin; inner lip thick, with a narrow channel, which terminates in a small umbilicus. Length somewhat more than three-eighths of an inch; breadth a quarter.

This species is subject to variety, both in the colour and disposition of the bands; sometimes it is of a pale horn-colour, with the zones very faint; at other times they are very distinct. It is sometimes confounded with the *P. canalis*, but may at once be distinguished by the canal of this species being much longer, and also by its umbilicus, as well as the subangulated form of the aperture. Inhabits the north and south coasts of Devonshire, the Yorkshire, Northumberland, and eastern coasts of Ireland, and is common in the Frith of Forth; usually adhering to Algae.

3. *P. canalis*, pl. X, f. 48.—First Ed., pl. 46, f. 48; *Turbo canalis*; Montagu, p. 309, pl. 12, f. 11; Maton and Racket, Linn. Trans., VIII, p. 220.

Shell conic, with five smooth, rounded, pellucid, horn-coloured volutions; the body one being longer than the spire; apex pointed; aperture suborbicular, subangulated, with the outer lip extremely thin; pillar lip broadly reflected on the columella, and provided with a channel, terminating in an umbilicus. Length three-eighths of an inch, breadth not half its length. Found at Southampton, and the coast of Tenby, Wales.



Montagu mentions a variety with two brown bands on the body, found by him at Southampton, where it is not uncommon.

4. *P. crassior*, pl. X, f. 43.—First Ed., pl. 46, f. 43; *Turbo crassior*; Montagu, p. 309, pl. 20, f. 1; Maton and Racket, Linn. Trans., VIII, p. 159; Fleming, Brit. An., p. 299; *Turbo pallidus*, Donovan, V, pl. 178, f. 4; Walker, f. 24.

Shell strong, thick, opaque, conic, with five rounded volutions, flattened above, and subcarinated, separated by a deep suture, and terminating in an acute apex; body with a few indistinct, nearly obsolete, spiral striae; aperture sub-orbicular, white; pillar lip slightly wrinkled; outer lip rather thin; colour cream-white, covered by a yellowish-brown epidermis.

This species is nearly allied to *P. canalis*, but may readily be distinguished from it, being longer in proportion to its breadth, in its volutions being more produced, and the body shorter in proportion to the superior volutions. In the young state there are sometimes indications of a groove and umbilicus at the base of the columella, but which is always closed up in the adult condition.

Inhabits the coast of Sandwich, Biddeford Bay, and the coast of Wales; plentiful in the Frith of Forth and Dublin Bay.

5. *P. scripta*, pl. IX, f. 21.—First Ed., pl. 50, f. 21; Maton and Racket, Linn. Trans., VIII, p. 185; Adams, Linn. Trans., III, p. 66, pl. 13, f. 17-18.

Shell smooth, opaque; spire with two rounded, deeply-divided volutions; apex obtuse; body large, nearly three times the length of the spire; aperture sub-rotund; body with three brown lines, or bands, resembling characters, such as those on the *Lichens scriptus*, which, however, can only be distinguished by the aid of a lens, as they appear continuous to the naked eye. Inhabits the coast of Pembrokeshire.

6. *P. cornea*, pl. X, f. 47.—First Ed., pl. 46, f. 47.

Shell smooth, tapor; spire consisting of five slightly divided volutions terminating in an acute apex; body nearly double the length of the spire; aperture semi-ovate, pillar lip slightly reflected on the columella, and broadest beneath; outer lip thin, a little reflected, colour reddish-fawn. Length upwards of seven-eighths of an inch; breadth of body three-eighths. I found this shell at Portobello, near Edinburgh. In Lady Jardine's Cabinet.

7. *P. stylifera*, pl. X, f. 40-41.—First Ed., pl. 46, f. 40-41. Turton, in Zoological Journal, II, p. 367, pl. 13, f. 11.

Shell oval, yellowish horn-colour, transparent, with five smooth volutions, the body one being very tumid, and those of the spire extremely small, and diminishing abruptly, terminating in an acute point; aperture sub-orbicular, with the margin disunited at top, and extremely thin, destitute of an operculum; towards the pillar side, the colour becomes more intensely rufous. Length a line, breadth not so much.

Dr Turton says, "The sudden and extremely minute volume of the three apical volutions—in this respect resembling the *Voluta bulloides*—distinguishes it from all the other minute turbinated shells."

A dozen specimens of this pretty shell were found adhering to the spines of the *Echinus esculentus*, dredged up in Torbay by Dr Turton.

8. *P. fasciata*, pl. X, f. 54.—First Ed., pl. 46, f. 54. *Helic fasciata*. Adams, in Linn. Trans., V, p. 5, pl. 1, f. 20-21; Montagu, p. 446.

Shell thin, smooth, white, with three volutions; the body one ventricose; the spire depressed; aperture dilated, columella sub-umbilicated; the body with three transverse bands of a rich marone colour, the middle one broad, and the lateral ones narrow. Length an eighth and a half of an inch. Inhabits the coast of Pembrokeshire.

9. *P. bifasciata*, pl. X, f. 44-45.—First Ed., pl. 46, f. 44-45.

Shell smooth, ventricose, consisting of four volutions; the spire very short, and body very large and rounded; volutions distinctly divided; aperture semi-ovate, narrow above, and rounded below; outer lip thin, expanding; pillar lip broadly reflected on the columella, with an oblong furrow in its centre; apex somewhat obtuse; colour cream-white; body with two very broad umber-brown bands which are visible inside of the aperture, and the volutions with one each at their base. Length three-eighths of an inch. Found at Portobello, adhering to Algæ, by General Bingham.

10. *P. striata*, pl. X, f. 49.—First Ed., pl. 46, f. 49.

Shell smooth, horn-coloured; spire small, consisting of two well defined volutions, apex rather obtuse; body elongated; taper at the base, with very minute spiral striae, not discernible but by the aid of a lens; aperture oblong-ovate, pointed at both extremities; outer lip somewhat expanded, thickened, inflected above, and thin below; pillar lip reflected on the columella, with an elongated sub-umbilicus on its centre. Length a quarter of an inch; breadth about an eighth. Found at the Rock of St Skae, Forfarshire.

#### GENUS XVII.—RISSEA.—Desmarest.

Shell univalve, spiral, oblong, or turreted; not umbilicated, often ribbed; aperture entire, oval, oblique, dilated, rather angular above, and with a slight sinus at the base; lips entirely or nearly united, the outer one often thickened, its edges not reflected; with a testaceous operculum.

1. *R. calathisca*, pl. IX, f. 4.—*Pyramis calathiscus*; First Ed., pl. 50, f. 4; *Turbo calathiscus*, Montagu, Sup. p. 132, pl. 30, f. 5; *Cingula calathisca*; Fleming, Brit. An., p. 305.

Shell conic; spire with five abruptly tapering volutions; on the body are eight transverse spiral series of tubercles: on the lower volution of the spire four rows, and afterwards one less on each succeeding volution, and lost in the apex, which is acute; the whole shell has a fine cancellated appearance to the naked eye; aperture suborbicular, margin white; the outer lip denticulated within; no reflection of the inner lip on the columella; colour deep burnt umber-brown. Length a quarter of an inch; breadth more than half its length. Inhabits the shores of the Island of Jura, one of the Hebrides.

2. *R. turricula*, pl. IX, f. 18.—*Pyramis turriculus*; First Ed., pl. 50, f. 18.

Shell subconic; spire about half the length of the body, with four turreted, slightly raised volutions, tapering to rather an obtuse apex; aperture semi-ovate, somewhat pointed above; outer lip thin, continuous with the inner lip, which is broadly reflected on the columella; the body and two under volutions with strong, smooth, glossy, longitudinal ribs; colour rusty-brown, inside pinkish-brown. Length not quite a quarter of an inch; breadth about two-thirds its length. Found by the Rev. Dr. Goodall, late Provost of Eton College, on the Devonshire coast. In his Cabinet.

3. *R. labiosa*, pl. VIII, f. 19.—*Pyramis labiosus*; First Ed., pl. 51, f. 19; *Turbo labiosus*; Maton and Racket, Linn. Trans., VIII, p. 164; *Helic labiosa*, Montagu, p. 400, pl. 13, f. 7; *Cingula labiosa*; Fleming, Brit. An., p. 307.

Shell subconic, subpollucid, of a light horn colour; spire with six, and sometimes seven flattish volutions, separated by a fine suture, terminating in an acute apex, which is frequently of a purplish colour; body about double the length of the spire; provided with from twelve to fifteen faint ribs on the three under volutions; upper volutions of the spire smooth; aperture placed slightly oblique, extremely glossy within, semi-ovate; outer lip white, much expanded, and thickened within, with its margin thin, and a little reflexed, and usually of a purplish-brown; the back a little gibbous, and generally whiter than the rest of the shell; pillar lip considerably reflected on the columella, which is undulated within, forming a small elevation, somewhat like an obsolete tooth. Length rather more than a quarter of an inch; breadth about half its length. Found at Falmeneth and various other places in Cornwall, Devonshire, and Welsh coasts, and Frith of Forth.

4. *R. obtusa*, pl. IX, f. 27, 28.—*Pyramis obtusus*; First Ed., pl. 50, f. 27, 28.

Shell strong, glossy, white, and opaque, with four inflated well defined volutions; body very large in proportion to the spire, which terminates in an obtuse smooth depressed volution; the whole shell with thick, longitudinal, numerous, slightly waved ribs, strongly striated transversely, giving it a somewhat tuberculated appearance; aperture obliquely ovate; outer lip very strong, separated from the body at its upper margin, continuous both above and below; inner lip reflected on the columella, narrowish above, and widening as it descends, with a slight sub-umbilicus. Length a tenth of an inch; breadth two thirds its length. Found at St. Fergus' Bay, Peterhead, by General Bingham, and in his Cabinet.

5. *R. Binghami*, pl. IX, f. 29.—*Pyramis Binghami*; First Ed., pl. 50, f. 29.

Shell with six volutions gradually tapering to an obtuse apex; and separated by a threadlike suture, which becomes obsolete in the upper volutions, with strong depressed longitudinal ribs, which reach only to the junction of the outer lip on the body; apex smooth, with distant transverse striae, producing a cancellated appearance; from the junction of the lip the lower part of the body is provided with very distinct close-set transverse striae, which continue to the base of the shell, and so strong as almost to be entitled to be called ribs, and even cross the inner lip at top; these are seen in the interior of the shell through the aperture, and also on the outer lip; aperture semi-ovate, a little straitened above; outer lip strong; inner lip narrow above, and gradually widening as it descends; whole shell of a deep flesh colour. Length an eighth and a half of an inch; breadth half its length. Found at St. Fergus' Bay, near Peterhead, by General Bingham.

6. *R. conferta*, pl. IX, f. 68.—First Ed., pl. 50, f. 68; *Turbo confertus*; Montagu, p. 314, pl. 15, f. 2; Maton and Racket, Linn. Trans., VIII, p. 173; *Cingula conferta*; Fleming, Brit. An., p. 306.

Shell strong, tapor white, provided with six volutions, terminating in rather an obtuse smooth apex; the whole shell furnished with about twelve undulating ribs, interrupted only by a fine suture; the interstices between them, at the top of each volution, are formed into small cavities, producing a scalloped or denticulated appearance, and is continuous throughout the suture; the ribs are crossed by minute close-set transverse striae, which can only be seen by the aid of a lens; aperture oval, oblique; outer lip strong, continuous; pillar lip broadly reflected on the columella. Length a quarter of an inch; breadth a third of its length. Found at Weymouth, Dorsetshire.

7. *R. sulcata*, pl. IX, f. 69.—*Pyramis sulcatus*; First Ed., pl. 50, f. 69.

Shell thick, white, and glossy, with six volutions, those of the spire but slightly raised, and tapering to rather an obtuse apex; with fourteen or fifteen longitudinal ribs; body nearly double the length of the spire; aperture oblong oval; outer lip thick, broad, and somewhat flattened in front, and continuous; pillar lip narrow above, and gradually widening as it descends. Length three-eighths of an inch; breadth about half its length. Found at Dunbar by General Bingham.

8. *R. fuscata*, pl. IX, f. 72.—*Pyramis fuscatus*; First Ed., pl. 50, f. 72.

Shell glossy, with seven volutions: the body and lower volution of the spire much inflated, the remaining volutions smooth, abruptly tapering to an acute apex; lower volution of the spire and body with eleven strong longitudinal ribs, those of the body extending above, a little way beyond the suture of the spire, and below only reaching to about the middle of the venter; aperture subrotund; outer lip thickened by a rib behind; pillar lip broadly reflected on the columella: shell of a pale fuscous brown. Length an eighth and a half of an inch; breadth not half its length. I found this elegant little shell at Port Seaton, Frith of Forth.

9. *R. costata*, pl. IX, f. 74.—*Pyramis costatus*; First Ed., pl. 50, f. 74; *Turbo costatus*; Montagu, p. 311, pl. 10, f. 6; Maton and Racket, Linn. Trans., VIII, p. 165; *Turbo crassus*; Adam's Micros., pl. 14, f. 20; *Cingula costata*; Fleming, Brit. An., p. 305.

Shell strong, white, subpellucid, glossy; with four or five convex volutions, those of the spire well defined by the line of the suture; furnished with strong, prominent, oblique ribs; the whole shell very finely striated transversely, most conspicuous between the ribs; apex obtuse; aperture semioval; outer lip much expanded, bordered by a strong prominent sutured rim, concentrically striated in the depression; a ridge rises at the aperture, and runs transversely backwards, then descends and joins to the margin of the lip behind; this ridge is bordered above by a fine slender groove where the longitudinal ribs terminate. The aperture, with its surrounding lips, appears distinctly separated from the body of the shell. Length an eighth of an inch; breadth about a third of its length. Found on the coasts of Sandwich, Devonshire, Dorsetshire, Cornwall, and the Frith of Forth.

10. *R. candida*, pl. IX, f. 75.—*Pyramis albus*; First Ed., pl. 50, f. 75.

Shell strong, glossy, white; with five gently tapering slightly raised volutions ending in an obtuse, smooth apex; the whole covered with numerous close-set longitudinal nearly straight ribs: body almost double the length of the spire; aperture semioval, slightly contracted above; outer lip a little thickened; inner lip narrow above, but gradually widening as it descends. Length an eighth and an half of an inch; breadth not quite half its length. Found by me at Belton Sands, near Dunbar.

11. *R. lactea*, pl. IX, f. 77.—*Pyramis nidens*; First Ed., pl. 50, f. 77.

Shell strong, white, glossy, consisting of seven taper very slightly raised volutions, terminating in a smooth rather obtuse apex; body and spire of equal length; the whole provided with numerous close-set longitudinal slightly oblique ribs: aperture semioval, oblique, slightly contracted above; outer lip a little thickened by a rib behind; inner lip narrow above, and expanding as it descends. Length nearly a quarter of an inch, breadth about a third its length. Found by me at Dunbar.

12. *R. Bryerea*, pl. IX, f. 78.—*Pyramis Bryereus*; First Ed., pl. 50, f. 78; *Turbo Bryereus*; Montagu, p. 313, pl. 15, f. 8; Maton and Racket, Linn. Trans., VIII, p. 172.

Shell strong, white, glossy, consisting of six or seven slightly rounded volutions, well defined by the suture; provided with about seventeen longitudinal somewhat oblique ribs; which are scarcely interrupted by the line of the suture; aperture ovate, slightly contracted above; outer lip strong, thickened by a rib behind; pillar lip thickest below, smooth, and slightly replicate. Length about a quarter of an inch; breadth not quite half its length. Found at Weymouth, Dorsetshire, the coast of Cornwall, and not uncommon in the Frith of Forth.

13. *R. Zetlandica*, pl. IX, f. 79.—*Pyramis Zetlandicus*.—First Ed., pl. 50, f. 79; *Turbo Zetlandicus*; Montagu, Linn. Trans., XI, p. 194, pl. 13, f. 3; *Cyclostrena Zetlandica*; Fleming, Brit. An., p. 312.

Shell white, somewhat turreted; with five very tumid volutions, furnished with spiral ridges, which are decussated with longitudinal elevated striae, that rise into sharp, angular tubercles at the points of decussation; at the base of the shell the spiral elevations are very prominent, and destitute of striae; apex obtuse, and smooth; aperture semioval; outer lip much expanded, its margin ornamented with sharp, elevated, triangular tubercles, and with a corresponding zigzag groove in its centre; pillar lip narrow, bounded by a prominent rib, which thickens gradually as it descends; above this is a flat space, with wide-set longitudinal striae, and this is surmounted by a transverse rib, which rises from the upper angle of the outer lip. Length not quite a quarter of an inch; breadth two-thirds its length. Found on the shores of the Isle of Noss in Zetland, by the Rev. Dr. Fleming.

14. *R. denticulata*, pl. IX, f. 80.—*Turbo denticulatus*.—First Ed., pl. 50, f. 80; Montagu, p. 315; Maton and Racket, Linn. Trans., VIII, p. 213.

Shell conic, subpellucid, white; with six volutions, terminating in an obtuse, smooth apex; the whole shell provided with nine or ten strong, somewhat oblique, longitudinal ribs, that project at the top of each volution, forming strong indentations; aperture subovate; outer lip broad, thickened by a rib; pillar lip smooth, broadly reflected on the columella, with one or two small tubercles at the base, adjoining the ribs. Length not quite a quarter of an inch; breadth one half its length. Found at Weymouth, Devonshire, Cornwall, and in the Frith of Forth at Dunbar.

15. *R. cimeæ*, pl. VIII, f. 21-22.—First Ed., pl. 51, f. 21-22; Montagu, p. 315; Donovan, I, pl. 2, f. 1-1; Maton and Racket, Linn. Trans., VIII, p. 163; *Cingula cimeæ*; Fleming, Brit. An., p. 305.

Shell white, thick; with four volutions deeply divided by the suture; apex obtuse; the whole shell covered with very coarse, longitudinal and transverse striae; producing deeply punctured interstices; aperture suboval; outer lip very thick, crenated internally, and with its edge strongly scalloped, produced by the striae on its back; pillar lip narrow above, and widening as it descends. Length an eighth of an

inch; breadth more than half its length. Found at Falmouth, Cornwall; south east of Devonshire; at Sandwich, Kent; and Portmarnock, Ireland.

The extraordinary thickness of this shell, for its size, at once distinguishes it from all its congeners.

16. *R. acuta*, pl. IX, f. 23-24.—*Pyramis labiosus*.—First Ed., pl. 50, f. 23-24.

Shell strong, very taper; consisting of six lengthened, slightly raised volutions, terminating in an acute apex; with ten depressed, slightly defined, longitudinal ribs, which are lost about the centre of the body, crossed by almost imperceptible transverse striae, which is most visible between the ribs; body a little longer than the spire; aperture oblique, semioval, and somewhat straight on the side next the columella; outer lip very broad, flattened, with a slight groove in its centre; pillar lip narrow. Length an eighth and a half of an inch; breadth a little more than a fourth of its length. Found at Dunbar by General Bingham. In his Cabinet.

17. *R. Adamsii*, pl. IX, f. 20.—First Ed., pl. 50, f. 20; *Turbo Adamsii*; Maton and Racket, Linn. Trans., VIII, p. 185; Turton's British Fauna, p. 184; *Turbo elegans*; Adams, Linn. Trans., III, pl. 13, f. 31-32.

"Shell pellucid; with six spirally striate volutions, remotely ribbed; aperture oval." Found on the coast of Pembrokeshire.

18. *R. pyramidilla*, pl. IX, f. 63.—*Pyramis pyramidillus*.—First Ed., pl. 50, f. 63; *Helix decussata*; Montagu, p. 399, pl. 15, f. 7.

Shell white; with eight or nine slightly raised volutions, tapering to a pointed apex; suture of the spire narrow; the whole shell covered with close, longitudinal, somewhat oblique striae, crossed by extremely minute spiral striae, giving it a decussated appearance when examined through a strong lens; aperture suboval, oblique, contracted both above and below, straightish on the side next the columella; outer lip somewhat expanded, and slightly thickened behind; pillar lip a little replicated, and very narrow. Length three-tenths of an inch; breadth about a tenth. Found at Weymouth, Dorsetshire, and at Dunbar, Frith of Forth.

19. *R. carinatus*, pl. IX, f. 57.—*Pyramis carinatus*.—First Ed., pl. 50, f. 67; *Turbo carinatus*; Adams on the Microscope, pl. 14, f. 18; Walker, f. 44; Montagu, p. 331.

Shell taper, carinated; with seven volutions; aperture contracted, margined; colour opaque white. Found at Sandwich; very rare.

We have never met with this shell, and have copied the figure and brief description from Walker.

20. *R. semicostata*, pl. IX, f. 1-2.—First Ed., pl. 50, f. 1-2; *Turbo semicostatus*; Montagu, p. 326, and Sup. p. 129; Maton and Racket, Linn. Trans., VIII, p. 162; *Cingula semicostata*; Fleming, Brit. An., p. 307.

Shell white, short, conic; consisting of four or five inflated volutions, well-defined by the suture, and terminating in an obtuse, smooth apex; spire about half the length of the body; volutions with twelve or thirteen longitudinal, somewhat elevated ribs, which reach only to the venter in front, and a little below the middle of the back behind; body with fine nearly obsolete transverse striae, which cross the ribs and become very distinct at the termination of the ribs, and continue so to the base of the shell: aperture large, suborbicular; outer lip smooth, and a little expanded; pillar lip slightly reflexed; columella smooth. Length sixteenth of an inch; breadth one half its length. Found on the south coast of Devonshire, and at Dunbar.

This shell may be mistaken for the *Rissoa parva*, unless attention is paid to the body being only partially ribbed.

21. *R. parva*, pl. IX, f. 55-56.—*Pyramis parvus*.—First Ed., *Turbo parvus*; Montagu, p. 310; *Turbo lacteus*; Donovan, III, pl. 90; *Cingula parva*; Fleming, Brit. An., p. 306.

Shell strong, conic, subpellucid; with four or five somewhat inflated volutions, well-defined by the suture, tapering to rather an obtuse apex; with from twelve to thirteen strong, elevated, longitudinal ribs; aperture suborbicular; outer lip thickened by a rib; pillar lip narrow above, and thickening as it descends; colour various, sometimes glossy white, at others of a dark chestnut, or pale reddish-brown, and sometimes it is of a deep-brown with white ribs. Length about an eighth of an inch; breadth more than half its length. Inhabits the sea at Cornwall, the Devonshire and Dorsetshire coasts, the Frith of Forth, and Cork, Dublin Bay, and Carrikerfergus Bay, Ireland.

22. *R. semistriata*, pl. IX, f. 3.—*Pyramis semistriatus*.—First Ed., pl. 50, f. 3; *Turbo semistriatus*; Montagu, Sup. p. 136; *Cingula semistriata*; Fleming, Brit. An. p. 309.

Shell smooth, thick, conic, white; with five moderately rounded volutions, well-defined by the suture; spire more than half the length of the body; apex a little obtuse; base of the body, from the junction of the outer lip, with fine spiral striae, which is also the case with the upper edge, and lower parts of the volutions of the spire: this can hardly be seen without the aid of a lens; aperture subovate, somewhat contracted above; outer lip thin; inner lip reflected on the columella, thickest in the centre; generally covered with a fuscous epidermis, beneath which are usually two series of remote pale, orange-coloured spots. Length an eighth of an inch; breadth half its length. Found on the south Devonshire coast, and at Dunbar, Frith of Forth.

This shell may be easily confounded with *R. interrupta*; but the striae sufficiently distinguish it, if examined with a lens.

23. *R. maculata*, pl. IX, f. 5-6. *Pyramis maculatus*.—First Ed., pl. 50, f. 5-6.

Shell with five ventricose, glossy volutions; spire well divided by the suture; the whole shell covered with extremely minute longitudinal and transverse striae; colour pale yellow, with three remote rows of equidistant, square ferruginous spots, becoming obsolete in the third volution of the spire, with terminates in rather an obtuse apex; aperture semioval, somewhat contracted above; pillar lip reflected on the columella, thickest in the centre, with a sub-umbilicus behind; outer lip rather thick. Length an eighth of an inch; breadth about half its length. Found on the sands at Weymouth, by Dr. Goodall, and in sand opposite Padstow Harbour, by Sir Ashton Molesworth, Bart.

This shell strongly resembles *Rissoa interrupta*, but is much broader in proportion to its length; it is besides transversely striate, while the *R. interrupta* is smooth.

24. *R. interrupta*, pl. IX, f. 45.—*Pyramis interruptus*.—First Ed., pl. 50, f. 45; *Turbo interruptus*; Montagu, p. 329, pl. 20, f. 8.—Maton and Racket, Linn. Trans., VIII, p. 166; *Cingula interrupta*; Fleming, Brit. An., p. 308.

Shell conic, pellucid, glossy, cream-white, with five slightly raised volutions, terminating in a moderately pointed apex; with a double series of oblong, distant spots on the body, and one row on the volutions of the spire; the upper row on the body is at top, the spots joining those of the spire, and are cut through by the suture; the second series, on the middle of the body; aperture sub-orbicular; outer lip rather strong; pillar lip reflected on the columella. Length an eighth of an inch; breadth a third of its length. Found at Falmouth; at Ilfracomb, Devonshire, and in the Frith of Forth.

25. *R. punctata*, pl. IX, f. 43.—*Pyramis punctata*.—First Ed., pl. 50, f. 43; *Turbo punctata*; Montagu, p. 320, pl. 12, f. 5.

Shell with six very glossy, cream-white, ventricose volutions, well defined by a deep suture, terminating in rather an obtuse, smooth apex; the whole shell very finely striated longitudinally and spirally, giving it the appearance of being punctated when examined with a strong lens, while, in reality, it is only the smooth interstices, between the striae, which present this appearance; aperture sub-orbicular; outer lip rather strong; pillar lip narrowly reflected on the columella. Length a tenth of an inch; breadth one-third its length. Found at Whitsand Bay, Cornwall; Salcomb Bay, Devonshire; at Padstow, Cornwall, and at Dunbar, by General Bingham.

26. *R. approxima*, pl. IX, f. 42.—*Pyramis approximatus*.—First Ed., pl. 50, f. 42.

Shell cream-white, with six glossy ventricose volutions, well defined by the suture, and tapering abruptly to a fine point; spirally and longitudinally striated, giving the shell the appearance of being punctated; aperture nearly round; outer lip thin; pillar lip slightly reflected on the columella. Length a tenth of an inch; breadth one-third of its length. Found by General Bingham on Belton Sands.

This shell is so like the *R. punctata*, that it may easily be mistaken for it; but on comparison, it will be found that the interstices representing punctures are nearly double the size, much less numerous than those of *R. punctata*, and the apex is somewhat more acute.

27. *R. reticulata*, pl. IX, f. 30.—*Pyramis reticulatus*.—First Ed., pl. 50, f. 30; *Turbo reticulatus*; Montagu, p. 322; Maton and Racket, Linn. Trans., VIII, p. 172; Walker, f. 32; *Cingula reticulata*; Fleming, Brit. An., p. 306.

Shell strong, conic, opaque, of a light brown colour; with six ventricose volutions, terminating in a rather obtuse, smooth apex; the whole shell with strong, wide, longitudinal, and transverse striae, producing a reticulated appearance; aperture sub-orbicular, a little pointed above; outer lip thick; inner lip moderately reflected on the columella, with a slight groove or sub-umbilicus behind. Length not a tenth of an inch; breadth more than half its length. Found on the coast of Sandwich, and at Dunbar by General Bingham; and in the Frith of Forth by dredging.

28. *R. arenaria*, pl. IX, f. 12.—*Pyramis arenarius*; First Ed., pl. 50, f. 12; *Turbo decussatus*; Montagu, p. 322, pl. 12, f. 4; *Helix arenaria*; Maton and Racket, Linn. Trans., VIII, p. 214.

Shell white, sub-pellucid, a little glossy, having five abruptly rounded volutions, tapering to a somewhat obtuse apex, and well defined by the suture; with very strong longitudinal striae, and extremely fine spiral striae, giving to the whole external surface a decussated appearance; aperture oblique, sub-oval, a little contracted above; outer lip thin; pillar lip very slightly reflected on the columella. Length not quite an eighth of an inch; breadth not half its length. Found at Salcomb Bay, Devonshire.

29. *R. subrufa*, pl. IX, f. 13.—*Pyramis subrufus*.—First Ed., pl. 50, f. 13; *Turbo subrufus*; Montagu, p. 334; Adams, Linn. Trans., V, p. 3, pl. 1, f. 18-19.

Shell smooth, with five volutions, somewhat angular above, opaque, dull red, the upper part of each volution marked with a white, transverse band. Found on the coast of Pembrokeshire.

We have copied the figure and description of this species from Adams, never having met with it.

30. *R. ulva*, pl. IX, f. 9, 14, 15, and 41.—*Pyramis ulva*.—First Ed., pl. 50, f. 14, 15, and 41; Montagu, p. 318; Maton and Racket, Linn. Trans., VIII, p. 164; *Cingula ulva*; Fleming, Brit. An., p. 308.

Shell with from five to seven smooth, gradually tapering, nearly flat volutions, separated by a very small suture, and terminating in a somewhat obtuse apex; aperture sub-oval, provided with a horny operculum; outer lip plain; pillar lip slightly re-

flected on the columella, with a small sub-umbilicus behind; colour fuscous or pale fawn. Length generally about a quarter of an inch, sometimes three eighths of an inch. Found in most of the inlets and harbours in Britain and Ireland.

31. *R. strigata*, pl. IX, f. 8.—*Pyramis strigatis*.—First Ed., pl. 50, f. 8; Adams, Micros., pl. 14, f. 16; Montagu, p. 331; Walker, f. 38.

Shell with three volutions; the spire with three transverse ridges; aperture sub-oval; colour opaque white. From Seasalter, very rare.

This figure and description are copied from Adams, as we have never met with it.

32. *R. disjuncta*, pl. IX, f. 7.—*Pyramis disjunctus*.—First Ed., pl. 50, f. 7; *Turbo disjunctus*; Laskey, Wernerian Memoirs, I, p. 405, pl. 8, f. 3; Montagu, Sup. p. 128; *Cingula disjuncta*; Fleming, Brit. An., p. 307.

"Shell rather slender, white, and perfectly smooth, with six remarkably rounded volutions, divided by a broad and deep line of separation, the bottom of which is flat, or a little concave, not angular, as in most other shells, giving it somewhat the appearance of the volutions being disunited, similar to the cast of some fossil species; aperture nearly orbicular; pillar lip reflected, behind which is an umbilicus. Length scarcely a quarter of an inch."—Montagu. Found by Captain Laskey at Belton Sands, near Dunbar.

33. *R. alba*, pl. IX, f. 16-19.—*Pyramis albus*.—First Ed., pl. 50, f. 16-19; *Turbo albus*; Adams, Linn. Trans., III, pl. 13, f. 17-18; Montagu, p. 332; *Cingula alba*; Fleming, Brit. An., p. 309.

"Shell opaque, with five longitudinally ribbed volutions; aperture roundish, not margined. Found on the coast of Pembrokeshire, in the roots of fuci."—Adams.

Dr. Fleming describes the shell thus:—"Length about a tenth of an inch, breadth one-half less; smooth, glossy, sub-pellucid, pale brown, when recent, or with spiral brown bands; whorls not much rounded, smooth, glossy; the ribs, which are rounded and slightly waved, sometimes do not reach the body-whorl; the shell then appearing not unlike *Cingula (Rissoa) interrupta*; aperture sub-orbicular; pillar lip a little reflected. This species has been probably confounded with *Cingula parva*, to which it bears a considerable resemblance; it is, however, more rounded in the aperture, and produced in the spire, and the outer lip is thin."

34. *R. ruber*, pl. IX, f. 17.—*Pyramis ruber*.—First Ed., pl. 50, f. 17; *Turbo ruber*; Adams, Linn. Trans., III, pl. 13, f. 21-22; *Cingula rubra*; Fleming, Brit. An., p. 308.

Shell with five pellucid, smooth, glossy, rounded, reddish-brown volutions, divided by a fine suture, and terminated in a pointed apex; aperture sub-orbicular; outer lip thin; pillar lip slightly reflected on the columella. Length an eighth of an inch, sometimes more; breadth nearly a third of its length. Found at Whitsand Bay, Cornwall, and at Portobello. Montagu mentions having found a shell "in every respect like this species, but in colour, which was perfectly white, and so transparent, that the whole columella was seen through the shell."

35. *R. striata*, pl. IX, f. 22.—*Pyramis striatus*.—First Ed., pl. 50, f. 22; *Helix striata*; Walker, f. 29; Adams, Micros., pl. 14, f. 13; Maton and Racket, Linn. Trans., VIII, p. 204; Montagu, p. 445; *Cingula striata*; Fleming, Brit. An., p. 307.

"Shell greenish-white, pellucid, striate; with three volutions reflected on the back; aperture suboval."—Walker.

36. *R. subumbilicata*; pl. IX, f. 44.—*Pyramis subumbilicatus*.—First Ed., pl. 50, f. 44; *Turbo subumbilicatus*; Montagu, p. 316; *Cingula subumbilicata*; Fleming, Brit. An., p. 308.

Shell conic, smooth, somewhat glossy, of a cream-white; with four or five very tumid volutions; the body one being rather longer than the spire, terminating in an obtuse apex; aperture oval; outer lip even; pillar lip slightly reflected on the columella, behind which is a slight sulcus or subumbilicus. Length an eighth of an inch; breadth about half its length.

Found at Weymouth, Dorsetshire; and at Portmarnock, Ireland. Rare. This species differs from the *Rissoa ulva* in being more ventricose, in the umbilicus being larger, and the aperture being quite ovate, and not contracted into an acute angle at the top. It may also be mistaken for *R. ventricosa*; but its greater proportional breadth at the base, and shape of the aperture, at once distinguish it. It never grows so large as the *R. ulva*, and always exceeds the *R. ventricosa* in magnitude.

37. *R. ventricosa*, pl. VIII, f. 27 and 59.—*Pyramis ventrosus*.—First Ed., pl. 51, f. 27 and 59; *Turbo ventrosus*; Montagu, p. 317, pl. 12, f. 13; Maton and Racket, Linn. Trans., VIII, p. 164; *Turbo eburneus*; Adams, Micros., pl. 14, f. 15; Walker, f. 36; *Cingula ventricosa*; Fleming, Brit. An., p. 307.

Shell smooth, glossy, thin, horn-coloured; with six ventricose, greatly rounded volutions, terminating in a moderately pointed apex; aperture suborbicular; provided with a thin, wrinkled, corneous operculum; outer lip thin, even; pillar lip not reflected on the columella. Length an eighth of an inch; breadth not one-half its length. Found at Folkestone and Sandwich in Kent, and in the Frith of Forth at Dunbar.

The glossy appearance of this shell at once distinguishes it from *R. ulva*.

38. *R. retiformis*, pl. VIII, f. 3 and 23.—*Pyramis retiformis*.—First Ed., pl. 51, f. 23; *Turbo retiformis*; Montagu, p. 330; Walker, f. 37.

"Shell with four tumid reticulated volutions; aperture oval; colour opaque-white. From Sandwich; very rare."—Walker.

39. *R. graphica*, pl. IX, f. 83.—*Pyramis graphicus*.—First Ed., pl. 47, f. 27; *Turbo graphicus*; Brown, Wernerian Memoirs, II, p. 521, pl. 24, f. 6.



Shell conic, pellucid, light horn-colour; with seven moderately rounded volutions, and generally two pale, yellowish bands on the body; finely and regularly spirally striate throughout; apex pointed; aperture subovate; outer lip thin even; pillar lip a little reflected on the columella.

This species differs from the *R. insculptus* in its colour and pointed apex; and in having no duplicature or subumbilicus behind the pillar lip, and being destitute of the small tooth. Length a line and a half; breadth not a line.

Found at the South Bull, Dublin Bay, by Dr. Turton, who says, "We found a variety more conic and paler, with yellowish marks on the body whorl, which is larger in proportion to the rest, and all are rounded and deeper defined."

40. *R. glabra*, pl. IX, f. 37.—*Pyramis glabris*, First Ed., p. 50, f. 37.

Shell subconic; with four bulging, narrow, deeply divided, very glossy, pellucid, blueish-white volutions, terminating in an obtuse apex; body more than double the length of the spire; aperture ovate; somewhat contracted above, outer lip thin, even; pillar lip not reflected on the columella above, but a little so on its lower half, behind which is a small subumbilicus, and a slight plication at the base. Length not a tenth of an inch; breadth half its length. Found at Belton Sands, near Dunbar, by General Bingham.

41. *R. spiralis*, pl. IX, f. 40.—*Pyramis spiralis*, First Ed., pl. 50, f. 4; *Turbo spiralis*, Montagu, p. 323, pl. 12, f. 9; *Voluta spiralis*, Maton and Racket, Linn. Trans., VIII, p. 130; Walker, f. 46.

Shell conic, pellucid, glossy, white; with four or five volutions; the body with transverse spiral ridges, half way from the base, the upper part, and volutions of the spire finely ribbed longitudinally; volutions nearly flat, but well-defined by the suture of the spire, which has a very fine, spiral ridge; apex obtuse; aperture suborbicular; pillar lip turning inwards, and producing the appearance of a small denticle, which is in truth a plication or ridge, that runs spirally some way up the columella, occasioned by the insertion of the lip. Length one line; breadth half its length. Found in sand at Salcomb Bay, Devonshire. Very rare.

42. *R. decussata*, pl. IX, f. 57.—*Pyramis decussatis*, First Ed., pl. 50, f. 57; *Turbo striatus*, Montagu, p. 312; *Phasianella decussata*, Fleming, Brit. An., p. 302; Maton and Racket, Linn. Trans., VIII, p. 173; Walker, f. 49; Adams, Linn. Trans., III, pl. 13, f. 25-26.

Shell pellucid, glossy, white; with six rather rounded volutions, terminating in a rather pointed apex, transversely striate and faintly ribbed on the upper part; aperture suboval, margined; sometimes covered with a brown epidermis. Length about an eighth of an inch. Inhabits the coast of Pembrokeshire.

43. *R. discrepans*, pl. IX, f. 70-71.—*Pyramis discrepans*, First Ed., pl. 50, f. 70-71.

Shell strong; with eight gradually tapering, ventricose volutions, well-defined by the suture; the second, third, and fourth volutions above the body provided with strong, regular, longitudinal ribs, the rest of the shell smooth, glossy, and of a deep cinnamon colour, with two indistinct bands across the body; apex moderately pointed; aperture subovate, and slightly contracted above; outer lip thin; pillar lip only reflected in its lower half, behind which is a small subumbilicus. Length a quarter of an inch; breadth about a third of its length. Found on the Devonshire coast, by Dr. Goodall.

44. *R. similis*, pl. VIII, f. 20.—*Pyramis similis*, First Ed., p. 51, f. 20.

Shell with six inflated glossy volutions, well-defined by the suture; body nearly double the length of the spire, the three lower volutions of which are provided with strong, straight, longitudinal ribs, between which the shell is a pale fawn colour; the two upper volutions smooth; aperture orbicular; outer lip thin and continuous, reflected on the columella; and becoming broader as it descends, behind which is a strong subumbilicus; colour pale yellowish-brown, with two zones of irregular rust-coloured spots on the body. Length a quarter of an inch; breadth half its length. Found in sand opposite Padstow harbour, by the Rev. William Molesworth; and in the Cabinet of Dr. Goodall.

45. *R. crystallina*, pl. IX, f. 76.—*Pyramis crystallinus*, First Ed., pl. 50, f. 76.

Shell blueish white, with five glossy, very smooth, somewhat ventricose volutions; ending in a rather obtuse apex; body more than one and a half the length of the spire, and a little cylindrical; aperture nearly orbicular; outer lip thin, smooth; pillar lip very slightly reflected on the columella. Length an eighth of an inch; breadth not half its length. Found at Tenby, by George Lyons, Esq., and in his Cabinet.

46. *R. vitrea*, pl. IX, f. 81.—*Pyramis vitreus*, First Ed., pl. 50, f. 81; *Turbo vitreus*, Montagu, p. 320, pl. 12, f. 3; Maton and Racket, Linn. Trans., VIII, p. 213; *Cingula vitrea*, Fleming, Brit. Ann., p. 303.

Shell subcylindrical, with five thin, pellucid, white, smooth, rounded volutions; separated by a very obliquely spiral suture; apex rather obtuse; aperture subovate, somewhat contracted above; outer lip thin, pillar lip hardly reflected on the columella. Length an eighth of an inch; breadth one-third its length. This shell is so transparent that the columella is visible through its whole length. Found at Whitsand Bay, Cornwall, the South coast of Devonshire, and in the Frith of Forth, at Dunbar.

47. *R. virginea*, pl. IX, f. 82.—*Pyramis vitreus* variety, First Ed., pl. 50, f. 82.

Shell subcylindrical, with four very glossy, blueish-white, transparent, oblique volutions; terminating in a somewhat obtuse apex; aperture semi-ovate, a little narrowed above; outer lip thin and sharp; inner lip thin, and reflected on the columella. Length an eighth of an inch; breadth not half its length. Found at Dunbar, by General Bingham, and in his Cabinet.

This shell differs from the *R. vitrea*, in the body being much larger in proportion to the length of the spire, and being oviform in its outline; the volutions of the spire are placed less obliquely, and the aperture is more ovate in its shape, with the outer lip not so abruptly produced.

48. *R. pallida*, pl. VIII, f. 24.—*Pyramis pallidus*, First Ed., pl. 51, f. 24; *Turbo pallidus*, Montagu, p. 325, and Sup. p. 133, pl. 21, f. 4; *Voluta ambigua*, Maton and Racket, Linn. Trans., VIII, p. 132; *Phasianella pallida*, Fleming, Fleming, Brit. Ann., p. 302.

Shell smooth, white, rather slender in shape, with six or seven volutions tapering to a moderately acute apex; volutions not much raised, but separated by a well defined suture; aperture suborbicular; outer lip arcuated; a faint duplicature on the outer lip, but destitute of any tooth, behind which a small umbilicus is formed by its reflection. Length a little more than the eighth of an inch; breadth barely a third of its length. Found in sand at Salcomb Bay, Devonshire. Very rare.

49. *R. pulla*, pl. VIII, f. 25.—*Pyramis pullus*, First Ed., pl. 51, f. 25.

Shell with eight slightly raised, smooth volutions, abruptly tapering to an acute apex; spire somewhat more than half the length of the body; aperture semi-lunar, placed obliquely, and pale violet within; outer lip a little reflected, thickened internally, but acute at its margin; pillar lip broadly reflected on the columella, and at its lower right angle extending obliquely, considerably beyond the body, and where it is a little turned over; the whole shell covered with a yellowish dun brown epidermis. Length three-eighths of an inch; breadth a little more than an eighth. I found this species on the Sands at Holy Island, coast of Northumberland. In my Cabinet.

50. *R. Sandvicensis*, pl. VIII, f. 26.—*Pyramis Sandvicensis*, First Ed., pl. 51, f. 26; *Turbo Sandvicensis*, Montagu, p. 332; Maton and Racket, Linn. Trans., VIII, p. 187; Adams, on the Microscope, pl. 14, f. 23; Walker, f. 55; *Odostomia Sandvicensis*, Fleming, Brit. An., p. 310.

"The three-spired, elegantly reticulated Turbo, with one-toothed oval aperture; colour pellucid white."—Walker.

From Sandwich. Exceedingly rare.

51. *R. unifasciata*, pl. VIII, f. 28.—*Pyramis unifasciatus*, First Ed., pl. 51, f. 28; *Turbo unifasciatus*, Montagu, p. 327, pl. 20, f. 6; *Cingula unifasciata*, Fleming, Brit. Ann., p. 309.

Shell smooth, conic, white, with five slightly raised volutions, divided by a very small suture; two purplish-brown bands on the body, one on the second volution, and sometimes also on the third; these are close to the suture; aperture suboval; outer lip thin, and a little reflected at the edge; pillar lip reflected on the columella; but no perforation behind it. Length an eighth of an inch; breadth more than a third its length. Found on the shore at Southampton, in sand from Burrow Island, Devonshire, and at Dunbar, by General Bingham.

Montagu says, "It is observable when it has two fasciae on the lower volution: they occupy no more space then when there is but one."

52. *R. fulgida*:—*Helex fulgidus*, Adams, Linn. Trans., III, p. 254; *Turbo fulgidus*, Montagu, p. 332.

"Shell subconic, pellucid, smooth, glossy, variegated with white and bronze, usually in bands; volutions three, the first very large; apex small, obtuse; aperture suborbicular, margin alternated. Length half a line."—Turton.

Found in sand from Whitsand Bay, Cornwall.

53. *R. elegans*.—Adams, Linn. Trans., III, p. 66, pl. 13, f. 31-32; Montagu, p. 333; Turton's Linn. IV, p. 489.

"Shell pellucid, with six spirally striate volutions, and remote ribs; aperture oval."—Turton.

54. *R. divisa*:—*Turbo divinus*, Adams, Linn. Trans., III, p. 254; Montagu, p. 334; Turton's Linn. IV, p. 489.

"Shell pellucid, white, with four volutions, each divided into two parts, the upper one smooth, the lower one spirally striate; aperture suboval."—Turton.

55. *R. marginata*, pl. IX, f. 83.—*Turbo marginatus*, Montagu, Sup. p. 123, Laskey, in Wernerian Memoirs, I, pl. 8, f. 13; *Cingula marginata*, Fleming, Brit. An., p. 306.

"Shell subcylindrical, white, very strong, and obtusely pointed; with six ribbed volutions, finely striated in a spiral direction; aperture oval; pillar lip thickened; outer lip extremely thick, and rounded by a rib at the back. Length three-eighths of an inch; breadth one-fourth its length.

"This shell somewhat resembles *Turbo (Rissoi) coniferus*, but is more slender, and the ribs are regularly arched over each volution, and not abruptly finished at the top, as in that shell."—Montagu.

Found at Dunbar, by Captain Laskey.

## GENIUS XVII.—PYRAMIS—BROWN.

Shell generally subulate, gradually tapering to a point; body usually short, and the spire long; volutions but slightly divided by the suture, and seldom inflated; aperture mostly oblong-ovate, placed nearly perpendicular, with its upper angle contracted for the most part; outer lip rarely continuous.

1. *P. subulatus*, pl. IX, f. 64, 65.—First Ed., pl. 50, f. 64, 65; *Turbo subulatus*, Donovan, pl. 172; *Helix subulata*, Maton and Racket, Linn. Trans., VIII, p. 120; Montagu, Sup. p. 142; *Phasianella-subulata*, Fleming, Brit. An., p. 301.

Shell strong, subulate, very smooth and glossy; consisting of ten perfectly flat volutions, separated by a fine suture, and tapering to a sharp pointed apex; aperture oblong-ovate, contracted above; outer lip rather thick; pillar lip slightly reflected on the columella; colour cream-white or flesh-colour, with a double spiral band of burnt-sienna colour, which becomes obsolete towards the apex. Length of the largest sized specimen nearly three quarters of an inch; breadth not a third its length. Found at Weymouth, and in the Frith of Forth. Very rare.

Donovan's figure has six bands on the body, but we have never met with any specimens containing more than two.

2. *P. politus*, pl. IX, f. 59, 60.—First Ed., pl. 50, f. 59, 60; *Helix polita*, Montagu, p. 398; Maton and Racket, Linn. Trans., VIII, p. 210; *Turbo albus*, Donovan, pl. 177; *Phasianella polita*, Fleming, Brit. An., p. 301.

Shell subulate, strong, white, extremely glossy, and quite smooth; with from nine to thirteen flat volutions, and hardly defined by the suture, which is very indistinct in this species: volutions gradually tapering to a sharp point; spire very long; body short; aperture oval, slightly contracted above; outer lip thick, but not marginated or reflexed; pillar lip slightly replicated. Length five-eighths of an inch. Found at Exmouth, Devonshire; Weymouth, Dorsetshire; South Wales; the Frith of Forth; and Bantry Bay, Ireland. We procured a fine specimen from the stomach of a haddock, which was taken in the Frith of Forth.

3. *P. elegantissimus*, pl. IX, f. 61.—First Ed., pl. 50, f. 61; *Helix elegantissima*, Montagu, p. 298, pl. 10, f. 2; Manton and Racket, Linn. Trans., VIII, p. 209; Walker, f. 39; *Turritella subulata*, Fleming, Brit. An., p. 303.

Shell subulate, glossy, semi-pellucid, white; with from nine to thirteen flat volutions, well defined by the suture; body very short; spire long, taper, and terminating in an acute apex; the whole shell covered with regular, somewhat oblique, strong longitudinal ribs, which are hardly interrupted by the line of the suture; the sulci are moderately deep, but not so broad as the elevated ridges; aperture suborbicular, somewhat angulated both above and below; outer lip strong; pillar lip slightly reflected on the columella. Length a quarter of an inch; breadth not a fourth of its length. Found at Sandwich, Falmouth, Salcomb Bay, Ilfracomb, Devonshire, and Portmarnock, Ireland.

4. *P. crenatus*, pl. IX, f. 53.—First Ed., pl. 50, f. 53.

Shell subulate, white pellucid, with ten volutions, well separated by the line of the suture; body very short, spire very long, and tapering to a acute point; the whole shell covered with strong, longitudinal, straight ribs, which are crossed by extremely minute transverse striæ; aperture suborbicular; outer lip strong; pillar lip slightly reflected on the columella. Length a quarter of an inch; breadth about a fourth of its length. Found at Belton Sands, near Dunbar, by General Bingham, in his Cabinet.

This species may be easily mistaken for *Pyramis elegantissimus*, but differs in the ribs being quite straight, and in being transversely striate.

5. *P. subarcuatus*, pl. IX, f. 62.—First Ed., pl. 50, f. 62; *Turbo subarcuatus*, Adams, Linn., Trans., III, p. 66, pl. 13, f. 27, 28; Maton and Racket, Linn. Trans., III, p. 185; Montagu, p. 333.

"Shell pellucid, white, and a little curved towards the tip, with ten longitudinally ribbed volutions; colour white."—Adams. Probably only a distorted variety of *P. elegantissimus*. Found on the coast of Pembroke-shire.

6. *P. unicus*, pl. IX, f. 46.—First Ed., p. 50, f. 46 and 48; *Turbo unicus*, Maton and Racket, Linn. Trans., VIII, p. 174; Montagu, p. 299, pl. 12, f. 2; *Turbo albidus*, Adams, Micros., pl. 14, f. 17, *Turritella unica*, Fleming, Brit. An., p. 303.

Shell subulate, with nine slender, glossy, pellucid, white, well-rounded

volutions: body very short, spire very long, terminating in a fine point the whole shell invested with fine longitudinal, somewhat undulating ridges, and the intermediate spaces covered with extremely fine transverse striæ, which can only be seen by the aid of a strong lens; aperture suborbicular, inclining to oval. Length two-tenths of an inch; breadth about a fourth its length. Found on the Devonshire and Welsh coasts; and at Dunbar, by General Bingham.

7. *P. indistinctus*, pl. IX, f. 47.—First Ed., pl. 50, f. 47; Montagu, Sup. p. 129; *Turritella indistincta*, Fleming, Brit. An., p. 304.

Shell subcylindrical, glossy, white; with six nearly flat volutions, terminating in a somewhat obtuse apex, but well-defined by the line of the suture; the whole shell is very finely ribbed longitudinally, and slightly and indistinctly punctured in the furrows, which can only be seen by the aid of a powerful lens, through which it appears cancellated; these transverse striæ are confined to the sulci, and do not cross the ribs; aperture subovate; outer lip thin, expanded; pillar lip a little spread on the columella. Length an eighth of an inch; breadth one-third its length. Found at Sandwich, and at Belton Sands, near Dunbar, by General Bingham.

8. *P. subtruncatus*, pl. IX, f. 49, 50.—First Ed., pl. 50, f. 49, 50; *Turbo subtruncatus*, Montagu, p. 300, pl. 10, f. 1; *Turritella subtruncata*, Fleming, Brit. An., p. 303.

Shell subcylindrical, with six or seven rounded, smooth, pellucid, yellowish-white volutions; slightly tapering, and terminating in an obtuse apex, with strong longitudinal striæ; aperture suborbicular, somewhat inclining to oval. Length three-tenths of an inch; breadth not half its length. Found on the Southampton coast, at Salcomb Bay, and at Belton Sands, near Dunbar, by General Bingham.

Colonel Montagu had described this species from worn specimens, as ours are all distinctly striate.

9. *P. nivosus*, pl. IX, f. 25, 26.—First Ed., pl. 50, f. 25, 26; *Turbo nivosus*, Montagu, p. 326; Manton and Racket, Linn. Trans., VIII, p. 163; *Turbo nivosus*, Fleming, Brit. An., p. 300.

Shell subcylindrical, smooth, white, pellucid, with five slightly produced volutions, but well separated by the raised, thread-like, spiral line of the suture, terminating in an obtuse apex; body somewhat longer than the spire, the base furnished with a series of spiral striæ, which reach to the upper margin of the outer lip in front; aperture suborbicular, much turned to one side; outer lip smooth, a little thickened, continuous; pillar lip considerably reflected on the columella, with a slight subumbilicus behind. Length not quite an eighth of an inch; breadth not half its length. Found on the south coast of Devon, very rare, and at Belton Sands, near Dunbar.

This species has much the appearance of *Jaminea interstincta*, but is destitute of both the tooth and ribs.

Colonel Montagu has overlooked the transverse striæ at the base of the shell.

10. *P. candidus*, pl. IX, f. 31.—First Ed., pl. 50, f. 31.

Shell semicylindrical, rather strong, blueish-white, and glossy: consisting of five volutions, slightly separated by the line of the suture, and terminating in a rather obtuse apex; body somewhat longer than the spire; the whole shell covered with very fine spiral striæ; aperture subovate; flattened at the base of the columella; outer lip smooth, somewhat thickened; pillar lip very slightly reflected on the columella. Length a little more than an eighth of an inch; breadth not half its length. Found at Belton Sands, near Dunbar, by General Bingham.

11. *P. discors*, pl. IX, f. 32.—First Ed., pl. 50, f. 32.

Shell subcylindrical, strong, snow-white, and glossy; five rather produced, slightly-divided volutions, and terminating in a rather obtuse apex; body and two lower volutions of the spire covered with close, regular, spiral striæ; these are all crossed at top by numerous, short, longitudinal furrows; aperture semioval, a little contracted at its upper angle, and slightly flattened on the pillar side; outer lip smooth, somewhat thickened; pillar lip slightly reflected on the columella. Length an eighth of an inch; breadth not half its length. Found at Belton Sands, near Dunbar, by General Bingham.

This species is nearly allied to *P. candidus*, but it is broader in proportion to its length, the striæ are wider, the spire shorter, the aperture longer and different in shape, and the furrows at the upper margin of the three lower volutions, all distinguish it from that shell.

12. *P. lavis*, pl. IX, f. 51-52.—First Ed., pl. 50, f. 51-52.

Shell subulate, snow-white, shining, consisting of eight greatly pro-

duced, and considerably inflated volutions, well defined by the line of the suture, and ending in an acute apex; spire long; body about one-third the length of the spire; aperture semioval, slightly contracted above; outer lip thin, smooth; pillar lip narrowly reflected on the columella. Length a little more than a tenth of an inch; breadth about a fourth of its length. Found at Dunbar, by General Bingham. In his Cabinet.

13. *P. acutissimus*, pl. IX, f. 36.—First Ed., pl. 50, f. 36.

Shell white, with eight somewhat inflated, well divided volutions, tapering abruptly to a fine point; spirally striated; aperture semioval; outer lip a little thickened; inner lip slightly reflected on the columella, behind which is a small subumbilicus. Length a tenth of an inch; breadth one-third its length. Found on Belton Sands, near Dunbar, by General Bingham, and in his Cabinet.

14. *P. Lamarekii*, pl. IX, f. 39.—First Ed., pl. 50, f. 39.

Shell white, glossy, turreted, and tapering gradually to an obtuse apex; six volutions, separated by a thread-like line in the suture; the body and three lower ones with five close-set, longitudinal ribs; aperture suboval; outer lip, smooth, even; pillar lip slightly reflected on the columella, behind which is a very small subumbilicus. Length an eighth of an inch; breadth not a third of its length. Found at Belton Sands, by General Bingham, and in his Cabinet.

15. *P. nitidissimus*, pl. IX, f. 54.—*Pyramis nitidissimus*, First Ed., pl. 50, f. 54; *Turbo nitidissimus*, Montagu, p. 299, pl. 12, f. 1; Maton and Racket, Linn. Trans., VIII, p. 175; *Turritella nitidissima*, Fleming, Brit. Ann., p. 304.

Shell smooth, pellucid, white, with nine extremely slender, greatly raised, and much rounded volutions, terminating in an obtuse apex, with a deep suture; aperture suborbicular; outer lip thin; inner lip slightly reflected on the columella. Length one-eighth of an inch.

16. *P. larcus*, pl. IX, f. 58.—First Ed., pl. 50, f. 58.

Shell white, subfusiform, consisting of ten abruptly tapering volutions, terminating in an acute apex, and well defined by the line of the suture; body ventricose, nearly equal to the length of the spire; the whole shell furnished with numerous, depressed, not very distinct, longitudinal ribs; aperture subrotund; outer lip thin, produced; pillar lip very slightly reflected on the columella. Length an eighth of an inch; breadth not quite half its length. I found this species at Belton Sands, near Dunbar.

17. *P. spirolinus*, pl. IX, f. 66.—First Ed., pl. 50, f. 66.

Shell white, abruptly tapering, with seven deeply divided, somewhat triangular volutions, with a subearina near the lower margin of each, from whence they suddenly oblique towards the suture; provided with about fourteen rather strong, longitudinal ribs, and these are crossed by numerous, rather wide, spiral striæ, giving the shell a cancellated appearance; aperture suboval, slightly contracted above; outer lip thin; pillar lip reflected on the columella. Length somewhat more than an eighth of an inch; breadth about half its length. I found this interesting species on the beach at St. Cyrus, Kincardineshire, immediately under Kirkside House, the seat of Major-General Sir Joseph Stratton.

18. *P. viteatus*, pl. VIII, f. 29.—First Ed., pl. 51, f. 29.

Shell cream-white, smooth, shining, consisting of nine well-rounded, not very deeply-divided volutions, abruptly tapering to an acute apex; each volution furnished with a broad, yellowish-brown band in its centre, with two narrow lines of the same colour above it; the body provided with two broad bands, the one in its centre, and the other on its base, parallel with the outer lip; between these there is a very narrow line of the same colour, and two above the superior band; aperture oblong-ovate, a little contracted both above and below; outer lip thin, not continuous above; pillar lip slightly reflected on the columella. Length somewhat more than an eighth of an inch; breadth about a third of its length. This elegant and beautiful species was discovered by General Bingham on Belton Sands, near Dunbar, and we have found it since in the same locality.

12. *P. truncatus*, pl. VIII, f. 31. 31.—First Ed., pl. 50, f. 31; *Turbo truncatus*, Montagu, p. 300, pl. 10, f. 7; *Turritella truncata*, Fleming, Brit. An., p. 303; *Turbo nitidus*, Adams, Linn. Trans., III, p. 65.

Shell cylindrical, smooth, glossy, pellucid, horn-coloured; consisting of four lengthened, considerably raised volutions, deeply divided by the line of the suture, terminating in a truncated apex; the whole shell covered with strong longitudinal striæ; aperture ovate; outer lip thin; pillar lip much reflected on the columella. Length two-tenths of an inch; breadth one-

third its length. Found on the shore at Southampton and Plymouth, in both of which localities it is not uncommon; it has also been sparingly met with on the Devonshire coast, and at Weymouth, Dorsetshire.

20. *P. cingillus*, pl. IX, f. 73.—First Ed., pl. 50, f. 73; *Turbo cingillus*, Montagu, p. 328, p. 12, f. 7; Maton and Racket, Linn. Trans., VIII, p. 165; *Cingula cingilla*, Fleming, Brit. An., p. 309.

Shell conical, subpellucid, with six well-rounded volutions, abruptly tapering to a moderately pointed apex; body a fifth part longer than the spire, usually with six alternating bands of horn-colour and chestnut; sometimes they are purple, or purplish-brown and white alternately; volutions of the spire with only two bands, frequently becoming obsolete at the tip, which is uniformly brown; the whole shell with obscure spiral striæ, which are very conspicuous at the base; aperture suboval, a little contracted above; outer lip thin; inner lip reflected on the columella. Length an eighth of an inch; breadth not more than a third of its length. Found at Plymouth, and Salecomb Bay, Devonshire, the Frith of Forth, at Dunbar, Dublin Bay, and Portmarnock, Ireland.

21. *P. similimus*.—*Turbo similimus*, pl. IX, f. 83; Montagu, Sup. p. 136; Laskey, Wernerian Memoirs, I, p. 406, pl. 8, f. 15.

"Shell slender, white, with eight or nine volutions, furnished with fourteen ribs, or elevated striæ; these stand straight in the line of the shell; apex pointed; base destitute of striæ; aperture subovate. Length three-eighths of an inch.

"This has much the habit of *Turbo* (*Pyramis*) *elegantissimus*, but is not so slender, the ribs are less numerous, and consequently more distant, the sulci or depressions being larger than the elevations. Those who have an opportunity of comparing these two shells will also observe that the ribs in *P. elegantissimus* do not run straight, but oblique to the right, are not so much arched, and are larger than the interstices. Discovered by Captain Laskey to inhabit the shores of the Island of Jura."—Montagu.

#### GENUS XIX.—TURBO.—LINNÆUS.

Shell conoid, or sub-turriculated; aperture entire, round; margin of the outer lip disunited; columella arcuated, depressed, but not truncated at the base; aperture provided with a testaceous operculum.

##### *Subdivision I.—Destitute of an Umbilicus.*

1. *T. littoreus*, pl. X, figs. 1, 2, 3, 4, 5, 6, 7, 8, 9.—First Ed., pl. 46, figs. 1, 2, 3, 4, 5, 6, 7, 8, 9; Linnæus, Systema Naturæ, II, p. 1232; Donovan, I, pl. 33, f. 1, 2; Montagu, p. 301; Da Costa, p. 98, pl. 6, f. 1-1; Brown, Ency. Brit., VI, p. 423; Fleming, Brit. An., p. 298; Brown, Wernerian Memoirs, II, p. 521; Maton and Racket, Linn. Trans., VIII, p. 158, pl. 4, figs. 8, 9, 10, 11.

Shell very thick, suboval; the body large in proportion to the spire, which consists of four or five slightly raised volutions, separated by a very fine suture, and ending in a somewhat obtuse apex; aperture suborbicular; outer lip rather thin, a little reflected in full-grown shells; pillar lip white, broad, and thickened at the edge; the whole shell thickly covered with strong, irregular, spiral striæ, with numerous lines of growth, producing a somewhat undulated appearance in the striæ; colour russet, yellowish-brown, or drab, with transverse spiral bands of black, or purplish-brown; sometimes it is entirely of a rich orange, or approaching to scarlet, and in others these colours have zones of black. Length varying from an inch to an inch and five-eighths; breadth from six-eighths to an inch and a quarter. Found on almost all the British and Irish coasts, betwixt high and low-water mark.

This species is subject to very great variety in form, colour, and markings, as may be seen by our different representations; the striæ in some are numerous and small, others are deeply sulcated, with sharp ridges, and a little reflexed. In adults the striæ become less distinct.

This shell is well known in all the towns on the coast, by the name of Periwinkle, and is sold by measure as an article of food.

2. *T. radis*, pl. X, figs. 10, 11, 12, 13, 14, and 25.—First Ed., pl. 46, figs. 10, 11, 12, 13, and 25; Donovan, I, p. 33, f. 3; Maton and Racket, Linn. Trans., VIII, p. 159, pl. 4, figs. 12, 13; Brown, Ency. Brit., VI, p. 453; Montagu, 304; Brown, Wernerian Memoirs, II, p. 521; Fleming, Brit. An., p. 298.

Shell thick, strong, body large, spire short, somewhat depressed, and consisting of four moderately-rounded and well-defined volutions, ter-



minating in an obtuse apex; aperture suborbicular; outer lip thin at the edge, a little flattened within, and slightly reflected in old shells; pillar lip broad, white, and depressed on the columella, with a slight subumbilicus behind it in adult shells; colour drab, orange, yellow, or brown. Length three quarters of an inch; breadth nearly the same.

Common on almost all the British and Irish shores, adhering to stones, near high-water-mark, and not unfrequently out of reach of the tide.

In some instances the surface is covered with very faint, obsolete, spiral striae. The colour in young shells is exceedingly various, in which state it is also subject to great variety in its markings.

This species has been often confounded with *Turbo littoreus*, but is at once discriminated by its round, tumid, well-separated volutions, in every stage of growth.

3. *T. jugosus*, pl. X, f. 15, 16.—First Ed., pl. 46, f. 15, 16; Maton and Racket, Linn. Trans., VIII, p. 158, pl. 4, f. 7; Brown, Ency. Brit., VI, p. 453; Montagu, p. 586, pl. 20, f. 2.

Shell suboval, ventricose; body very large; spire short, consisting of three volutions, terminating in a moderately pointed, elevated apex; body provided with ten or eleven much elevated, sharp ridges, reflected a little upwards, the lower volution of the spire with three or four, and sometimes the same number on the second; aperture suborbicular; outer lip thin, subcarinated by the ridges; pillar lip broad, smooth; colour dull orange yellow, dark purple, and chocolate brown or purple within. Length and breadth about three-eighths of an inch. Found on the coasts of Dorsetshire, and St. Ives, Cornwall.

4. *T. tenebrosus*, pl. X, f. 18, 19.—First Ed., pl. 46, f. 18, 19; Montagu, p. 303; Turton, British Fauna, p. 179; Brown, Ency. Brit., VI, p. 453; Fleming, British Animals, p. 298; Pulteney, in Hutchins' Dorsetshire, pl. 18, f. 15.

Shell strong, short, conic; body large; spire short, consisting of four ventricose, deeply-divided volutions, terminating in a rather obtuse apex; aperture suborbicular; dark purplish-brown within; outer lip thin, except at the lower angle where it spreads a little, and from thence continues to thicken on the pillar lip; colour rich fawn, beautifully mottled with deep chocolate-brown, or reddish-brown. Length half an inch; breadth not three-eighths. Found on the coasts of Devonshire and Kent. It lives on rocks and mud near high-water-mark, and even in ditches subject to the daily flux of the tide.

5. *T. petraeus*, pl. X, f. 17.—First Ed., pl. 46, f. 17; *Helix petraea*, Fleming, Brit. An., p. 298; Montagu, p. 403; Pulteney, in Hutchins' Hist. Dorsetshire, pl. 18, f. 13; Turton, British Fauna, p. 180.

Shell strong, conic, opaque, dark purplish-brown; body large; spire short, consisting of four moderately raised volutions, ending in a sharp pointed apex; the volutions are well-defined by the separating line which, in the suture of the body, rises upon the base of the superior volution, with a slight, abrupt, rugged edge, and does not turn inwards and become obsolete at the junction of the spire, as is usual with most turbinated species; the whole surface is covered with faint, irregular, longitudinal lines of growth, and which, in the under part of the body above the aperture, is quite plain; aperture a little semilunar; outer lip considerably produced, with an attenuated margin; pillar lip smooth, flat, and diagonally reflected on the columella, the whole length of the aperture; this, as well as the inside, and corneous operculum, is of a deep-glossy, reddish-purple; inner lip straight, and brought to an edge. Length rather more than a quarter of an inch; breadth two-tenths of an inch.

Inhabits rocks below high-water-mark, on the south coast of Devonshire, near the mouth of the Aun, not far from the village of Bantum, at Swanage, Dorsetshire, and is plentiful on the Basaltic Columns at the mouth of Fingal's Cave, Island of Staffa.

There is a variety with the upper part of the body blotched and striated with white and reddish-brown, but the smooth part of the pillar lip and inside are invariably of the same dark purple colour.

6. *T. labiatus*, pl. X, f. 20, 21.—First Ed., pl. 46, f. 20, 21.

Shell thin, short, subconic, body extremely large, and spire very small, being only a sixth of the length of the body, and consisting of three somewhat inflated volutions, terminating in an obtuse apex; aperture subrotund very large, deep sienna-brown within; outer lip thin and expanding, with a pale chestnut edge; pillar lip white, very broadly reflected on the columella, with a slight subumbilicus in its centre; venter a little depressed; a few extremely indistinct spiral wrinkles on the body, and crossed by

extremely faint lines of growth; colour pale chestnut or fawn, beautifully clouded or blotched with purple. Length half an inch; breadth three-eighths. Discovered at Penzance, Cornwall, by General Bingham.

We have since received a variety from the same locality of a pale chestnut colour, inclining to green, destitute of any markings.

7. *T. Ventricosus*.

Shell rather thin, smooth, conic, ventricose, body large, and the spire small, measuring only a third of the length of the body, consisting of four inflated, deeply-separated volutions, and terminating in a rather obtuse apex; the superior part of the body and volutions of the spire somewhat flattened above, giving them a subcarinated appearance; aperture subrotund, dark burnt-umber brown within; outer lip thin, slightly inflected, and of a rich fawn colour at the edge; pillar lip broadly reflected on the columella, a little concave in the centre, and of a brownish-purple colour; the whole exterior surface covered with zig-zag markings of a deep reddish-brown, and dull wood-brown, yellowish towards the margin of the lip; a few obsolete lines of growth can be distinguished crossing the body. Length nearly five eighths of an inch; breadth nearly half an inch. Found by James Macdonald, Esq., adhering to stones near high-water-mark, in Clew Bay, County of Mayo, on the west coast of Ireland.

We have also received a variety, which is obsoletely sulcated spirally on the body; with the apex a little more acute, and the depression on the upper part of the volutions less conspicuous, and having a pale buff-coloured spiral band on the upper margin of the body and volutions, close to the suture, and terminating in the apex.

This shell is somewhat allied to both the *Turbo tenebrosus* and *labiatus*; it differs from the former in being less elongated, and in the body being much larger in proportion to the spire; and from the latter in the body being less in proportion to the spire, and in the aperture being greatly smaller.

8. *T. dispar*, pl. X, f. 22.—First Ed., pl. 46, f. 22; Montagu, Linn. Trans., XI, p. 195, pl. 13, f. 4.

Shell strong, short, conic; spire extremely small, consisting of three very flat volutions, separated by a fine suture; body very large, being five times the length of the spire, obsoletely striated in a spiral direction, obliquely wrinkled, longitudinally, and subcarinated at the base; aperture suborbicular, dark purplish-brown within; outer lip thin, extending high upon the body, and not continuous; pillar lip very broadly reflected on the columella, and longitudinally concave; colour blueish-gray, with one pale band near the lower extremity of the lip within. The volutions of the spire are usually decorticated. Length a quarter of an inch; breadth somewhat less. Found at Poole, Dorsetshire, by the Rev. Wm. Bingley; and has since been met with on the rocks near the Giant's Causeway, west coast of Ireland.

This species has some similitude to *Turbo ziczac*, but is proportionally shorter, more obtuse, has a greater disproportion between the body and spire and is destitute of the zigzag markings of that species. It is provided with a corneous operculum, of a dusky-brown colour.

9. *T. ziczac*, pl. X, f. 26, 27.—First Ed., pl. 46, f. 26, 27; *Turbo ziczac* Maton and Racket, Linn. Trans., VIII, p. 160, pl. 4, f. 14; Montagu, Sup. p. 135; Lister's Conchology, pl. 583, f. 38; *Trochus ziczac*, Gmelin's Linné p. 3587; Chemnitz, Conch., V, pl. 166, f. 1599.

Shell conic; spire very short, consisting of five white, or purplish-white, compressed volutions, separated by a fine suture, and ending in an acute apex, marked with equidistant, longitudinal, undulated, purple, or brownish-purple lines, body large in proportion to the spire, wide and subcarinated at the base; aperture subovate. Length half an inch; breadth more than a quarter.

Montagu says; "This species is subject to some variation in colour. A small variety, without the zigzag lines, has been found near Sunderland by Lady Wilson."

10. *T. quadrifasciatus*, pl. X, f. 35.—First Ed., pl. 46, f. 35; Maton and Racket, Linn. Trans., VIII, p. 167; Montagu, p. 328, pl. 20, f. 7; Brown, Ency. Brit., VI, p. 455; Ibid. in Wernerian Memoirs, II., p. 522.

Shell strong, smooth, subpellucid, subconic; spire short, consisting of three rounded, depressed volutions, and terminating in an obtuse apex; body very large, being nearly double the length of the spire; colour white or yellowish-white, with four yellowish-brown, or reddish-brown, transverse bands on the body, and generally two on the lower volution of the spire. In some specimens the bands are united, and form two broad

ones on the body, all of which are internally visible; aperture suborbicular, thickened within, but sloping to a thin edge on the outer lip; pillar lip broadly reflected on the columella, with a longitudinal groove in its centre, and ending in an umbilicus. Length rarely a quarter of an inch; breadth more than half its length. Found in Falmouth Harbour, the south coast of Devonshire, particularly at Salcomb, at low-water, attached to algæ. It is not uncommon in the Frith of Forth, and is to be met with sparingly at Portmarnock, Ireland.

11. *T. Neritiformis*, pl. X, f. 24.—First Ed., pl. 46, f. 24.

Shell strong, subconic, smooth; spire very short, being about a fourth of the length of the body, consisting of four well-rounded volutions, ending in an obtuse apex; body large, tumid, crossed by some obscure lines of growth, its upper margin provided with a spiral shallow groove, which continues throughout the volutions; aperture subrotund, dark purplish-brown within, pale fawn colour within the margin of the outer lip, which is thin, and not continuous; pillar lip glossy, white, or pale reddish-purple, broadly reflected on the columella, with a very slight subumbilicus behind. Length nearly five-eighths; breadth upwards of three-eighths.

We discovered this species, adhering to rocks below high-water-mark, near Downpatrick, Ireland, where it is very plentiful. We at first mistook it for a variety of *Nerita littoralis*, to which it bears a considerable resemblance.

12. *T. fabalis*, pl. X, f. 38-39.—First Ed., pl. 46, f. 38-39; Turton, Zoological Journal, II, p. 366, pl. 13, f. 10.

Shell very small, smooth, subglobular, very obtuse, with two hardly produced volutions; body extremely large in proportion to the spire; aperture large, subrotund; outer lip much expanded, and thin at the edge, and extending high on the body; pillar lip reflected broadly on the columella, from the centre of the aperture; colour pale chestnut, with zigzag markings of purplish-brown. Diameter about a line.

Found on the rocks at Scarborough by Mr Bean. It is frequently covered with a gray coating, which obscures the colour and markings, so as to produce a chequered appearance on its surface. By the aid of a strong lens it seems spirally striated.

13. *T. striatulus*, pl. X, f. 33-34.—First Ed., pl. 46, f. 33-34; Montagu, p. 306, pl. 10, f. 5; Maton and Racket, Linn. Trans., VIII, p. 172; Turton, Brit. Fauna, p. 180; *Turbo carinatus*, Da Costa, p. 102, pl. 8, f. 10; *Cingula striatula*, Fleming, Brit. Ann., p. 305.

Shell white, with four or five strong turreted volutions, terminating in an obtuse apex; each volution flattened above, the upper ones being nearly cylindrical; body large in proportion to the spire; the base of the body provided with strong equidistant, spiral striæ, which, in the superior part of the body, assume the character of three strong, elevated, smooth ribs, the superior one bounding the upper edge; the other volutions with two ribs each, which become obsolete towards the apex; the furrows between the ribs are deep, and rounded at the bottom; the whole shell covered with strong, longitudinal striæ, which is most conspicuous in the furrows, and although interrupted by the ribs, produces a fine cancellated appearance, more especially on the base of the body; aperture suborbicular, angulated at the upper part, between the body and outer lip, producing a slight separation; outer lip broad, smooth, and marginated; inner lip a little reflected on the columella above, but widening as it descends, and is continuous with the outer lip. Length two-tenths of an inch; breadth not quite so much.

Inhabits the coasts of Cornwall, and was found by Colonel Montagu in sand from Falmouth Harbour, as also on the coast of South Devon. We procured it from Weymouth, but in all these situations it is an extremely rare shell; and is one of the most elegant of the minute British species.

14. *T. aureus*, pl. X, f. 23.—First Ed., pl. 46, f. 23.

Shell strong, with four depressed, well-divided volutions, covered with very strong spiral striæ; aperture round, which, with the pillar lip, is tinged with a golden metallic hue; outer lip strong; inner lip smooth, very broadly reflected on the columella, and somewhat sharp at the base; colour of a deep brownish pink, with a golden metallic lustre. Length and breadth about a quarter of an inch.

Found at Seaton, Northumberland, by Walter C. Trevelyan, Esq.; in the cabinet of Sir John Trevelyan, Bart.; Wallington, Northumberland.

#### SUBDIVISION II.—Shells Umbilicated.

15. *T. carneus*, pl. X, f. 36-37.—First Ed., pl. 46, f. 36-37. Lowe, Zool. Journal, II, p. 107, pl. 5, f. 12-13, and 13 b. magnified.

Shell subglobular, semi-transparent, with four, rather strong, convex

volutions; the base of the body flattened; and furnished with regular elevated rounded belts, continued to nearly the apex, and separated by grooves; these are rendered rough to the touch by the faint lines of growth by which they are crossed; spire short in proportion to the size of the body, and terminating in a subacute apex; aperture nearly round, pearly internally; outer lip even, smooth, thin, and at its attachment to the body, slightly reflected, forming a subsinus; inner lip broadly reflected above, until it reaches the large and deep umbilicus, from whence it becomes narrow and straightish, with a gentle curve, slightly pointed at its lower attachment to the body, where it joins the outer lip. The whole shell is of an uniform yellowish flesh-colour, darker towards the spire, lighter beneath and at the apex, and destitute of the metallic lustre which is so remarkable in the *Turbo margarita*. It is provided with a horny operculum.

This shell is so nearly allied to the *Turbo margarita*, that it may easily be mistaken for a variety; but attention to the above characters will render the difference obvious.

Found on the Argyleshire coast by R. T. Lowe, Esq.

16. *T. margarita*, pl. X, f. 28-29.—First Ed., pl. 46, f. 28-29; Lowe, Zool. Journal, II, p. 107, pl. 5, f. 10-11, and 11, b.; Fleming, Brit. Ann., p. 299; *Helix margarita*, Montagu, Sup. p. 143; Laskey, Wernerian Mem. I, pl. 8, f. 5.

Shell rather strong, semi-transparent, subglobular; body rounded, convex at its base, and flattened, very large in proportion to the spire, which is small, short, with three moderately inflated volutions, terminating in a somewhat obtuse apex; the whole shell covered with very faint, regular, spiral striæ, which, however, are not visible without the aid of a lens; aperture circular, a little angular at the upper extremity, where it is slightly attached to the body, and nacreous within; outer lip with its margin plain and entire; inner lip broadly reflected above and narrowed, from the large, open, and deep umbilicus; colour of a livid bronze or pearly-lustre, with metallic reflections; operculum horny and rounded. Diameter somewhat more than an eighth of an inch.

Found at Dunbar, Frith of Forth; at Gallach, south of Oban, Argyleshire, and plentiful at Appin; also on the south coast of Devonshire.

17. *T. olivaceus*, pl. X, f. 30-31.—First Ed., pl. 46, f. 30-31.

Shell thin, olive coloured, pellucid, smooth, subglobose; body large, inflated; spire small, short, with three depressed volutions, terminating in a moderately pointed apex; aperture large, circular, standing out from the body; outer lip thin, continuous with the inner lip above, which is narrow, and a small circular umbilicus behind. Length two-tenths of an inch.

Found at Greenock by Stewart Ker, Esq.

#### GENUS 20.—TROCHUS.—Linnaeus.

SHELL conical; spire elevated, sometimes abbreviated; aperture transversely depressed; margin of the outer lip disunited from the body at the upper part; columella arcuated, more or less oblique at the base; aperture provided with a horny operculum.

##### Subdivision I.—Umbilicated.

1. *T. Magus*, pl. XI, f. 12-15.—First Ed., pl. 45, f. 12-15; Montagu, p. 283; Pennant, Brit. Zool. IV, p. 126, pl. 80, f. 107; Donovan, Brit. Sh. I, pl. 8, f. 1; Fleming, Brit. An., p. 321; Brown, Ency. Brit. VI, p. 450; Turton, Brit. Fau., p. 177; Lamarck, VII, p. 15.

Shell subconic, with five or six tumid, somewhat depressed volutions, separated by a well defined, deep suture, terminating in a fine pointed apex; each of the volutions slightly flattened above, with a series of oblique tubercles along their margins, producing a somewhat undulated appearance; the margin of the base subcarinated and rounded beneath; the whole surface covered with somewhat irregular, strong, spiral striæ, and crossed by very fine, oblique, longitudinal striæ in the direction of the lines of growth; aperture compressed, angulated, inside pearly, with an open spiral groove, extending as far as can be seen; umbilicus large and very deep; colour various, pale salmon, citron, yellow, or white, with elegant, undulating stripes of pink, reddish-brown, or purplish-brown, and sometimes spotted all over with the above colours, at other times, in regular series of remote, square, or lozenge spots; in some specimens the upper edge of the volutions are ornamented by a series of dark brown irregularly shaped markings; size usually about an inch in diameter at the base, and three-quarters of an inch in height; sometimes, though rarely, an inch and a half broad. We obtained specimens measuring two inches at the base, in the Kyles of Bute, Inchmarnock, and Island of Arran.



Found plentifully at Falmouth, Cornwall; Salcomb Bay, Devonshire; Donaghadee and Portmarnock, Ireland.

In a young state, this shell is often of an uniform, light-brown colour, with close-set, longitudinal striæ between the ridges; and the base furnished with a subcarinated edge, above which the sulcus is crenated.

2. *T. umbilicatus*, pl. XI, f. 9 and 11.—First Ed., pl. 45, f. 9 and 11; Montagu, p. 286; Da Costa, p. 46, pl. 3, f. 4, 4; Fleming, Brit. An., p. 322; Brown, Ency. Edinensis, pl. 54, f. 8; Ib. Ency. Brit., VI, p. 450; *Trochus umbilicaris*, Pennant, Brit. Zool., IV, p. 126, pl. 80, f. 106; Lamarck, VII, p. 28; *Trochus cinerarius*, Donovan, Brit. Sh., III, pl. 74, three central figures; Turton, Brit. Fau., p. 178.

Shell strong, subconic, depressed, with five nearly flat volutions, terminating in an obtuse apex, and defined only by a fine, thread-like suture; base of the body rounded at the margin; the whole shell covered by almost obsolete spiral striæ, which are stronger on the somewhat flattened base; aperture compressed and angulated; inside pearly, reflecting deep green and crimson; outer lip flattened on the edge; umbilicus large, white, rounded at its edges, slightly wrinkled internally, and penetrating to the apex; colour white, livid, or greenish, with longitudinal, waved or zigzag, reddish-purple lines. Diameter at the base three quarters of an inch; height not quite so much.

Found on *fuci* near low-water mark, in Devonshire; Wales; and is plentiful in the Kyles of Bute; Portmarnock, Dublin Bay, and Killough, Ireland.

Young shells of this species are greatly depressed, those of three-eighths of an inch at the base being hardly one-eighth high. The apex of the *Trochus umbilicatus* is so thinly covered with epidermis, that it is but rarely found perfect, the nacreous substance almost always being exhibited. The very highly iridescent reflections in the interior of the aperture is an uniform character of this species.

3. *T. cinerarius*, pl. XI, f. 5 and 8.—First Ed., pl. 45, f. 5 and 8; Montagu, p. 284; Donovan, Brit. Sh., III, pl. 74, two upper and two lower figures; Fleming, Brit. An., p. 322; Lamarck, VII, p. 29.

Shell subconic, subdepressed, not quite regularly toper, with five slightly-raised volutions, separated by a fine suture, terminating in a rather small produced apex; the lower margin of the body subcarinated; the whole shell beset with strong spiral striæ, diagonally crossed by very fine, nearly obsolete, longitudinal striæ; colour cinereous, sometimes greenish-yellow, with fine, longitudinal, undulating, oblique, brown lines, frequently of a purplish hue; aperture angulated, internally pearly; umbilicus large, deep, and abruptly narrowed within. Size of the base one inch; height seven-eighths. Its height, however, is but seldom so much in proportion to its diameter, being generally only about six-eighths when its diameter is an inch.

Common on most of the British shores, in pools, between high and low water-mark.

Fig. 10. A variety of *Trochus cinerarius*, in which the volutions are more inflated, and the ground colour of a fine pale Indian yellow, with a series of deep burnt-umber brown, triangular spots on the upper margin of the body.

4. *T. littoralis*, pl. XI, f. 1 and 4.—First Ed., pl. 45, f. 1 and 4.

Shell strong, conical, with six slightly rounded volutions, defined by a well-marked suture, terminating in a small, obtuse, perforated apex; the whole shell covered by very strong, spiral striæ, intersected by almost invisible, obliquely longitudinal, very close striæ; base of the body with a sharp subcarinated margin, slightly rounded beneath; aperture subquadrangular, but somewhat rounded, pearly within; outer lip thin at the margin, and considerably sunk beneath the base of the shell; inner lip thickened, and slightly reflected over the umbilicus, which is rather small, a little compressed, and penetrating to the apex; colour yellowish ash, or pale reddish-buff; with fine, irregular, obliquely longitudinal lines of deep reddish-brown. Ordinary diameter at the base half an inch; height somewhat more. The specimen from which our figure was taken measured six-eighths and a little more in height. It is in the Cabinet of Lady Jardine.

This shell at first sight may be mistaken for a produced variety of *Trochus cinerarius*; but will be at once recognised by its perforated apex, in the umbilicus being smaller and slightly compressed, in the striæ being stronger, and in its more rounded and less compressed aperture.

We first discovered this species on the rocks at Killoch, county of Down, Ireland, and have since obtained it from Clew Bay, west coast of Ireland.

5. *T. perforatus*.

Shell subconic, strong, with fine slightly-raised volutions, terminating in an obtuse, perforated apex; whole surface invested by a thick, papillose, shagreen-like epidermis, of a brownish-drab colour; beneath which the shell is covered with strong, smooth, spiral striæ; colour of a greenish-ash; and ornamented by obliquely longitudinal fine reddish-brown lines. Base of the body subcarinated, and a little rounded beneath; aperture subquadrangular, pearly within; inner lip thickened, and slightly reflected over the umbilicus, which is small, and penetrating to the apex. Diameter at the base nearly six-eighths of an inch; height about five-eighths.

Dredged in deep water in the Kyles of Bute, by James Smith of Jordanhill, Esq.

This shell was at first mistaken by us for a variety of *Trochus cinerarius*, but, on closer examination, we found it to possess very different characters. It differs from all the other British Trochusidæ in its being invested by a very thick epidermis; and its subcarinated form at the base, with the colour and character of its markings, and less intense by nacreous reflections, distinguish it from the *Trochus umbilicatus*. It is considerably more depressed than *T. littoralis*.

6. *T. tumidus*, pl. XI, f. 5 and 8.—First Ed., pl. 45, f. 5 and 8; Montagu, p. 280, pl. 10, f. 4, 4; Turton, Brit. Fau., p. 177; Fleming, Brit. An., p. 322.

Shell strong, subconic, with five rather tumid volutions, separated by a deep, well-defined suture, and terminating in a small but not toper apex; the whole shell covered with extremely fine, close-set spiral striæ; base of the body provided with a subcarinated belt, and somewhat rounded beneath, with a small umbilicus, which frequently decreases with age, and in the larger shells is sometimes nearly closed; aperture subquadrangular, pearly within; colour generally cinereous brown, sometimes yellowish, and at others purplish brown; streaked with longitudinal, undulating, continuous lines; and generally having a bronze appearance, occasioned by the thinness of the outer coating, which allows the mother-of-pearl to shine through. Height seldom exceeding three-eighths of an inch; breadth somewhat more.

Found in Salcomb Bay and Torcross, Devonshire; the Kentish coast; Weymouth; the coasts of Wales, estuary of the Clyde, and Firth of Forth; and Portmarnock and Dublin Bay, Ireland, of a large size. In this latter locality the specimen was found from which our figure was drawn.

7. *T. subcarinatus*, pl. XI, f. 30 and 31.—First Ed., pl. 51, f. 16, 17. *Trochus rugosus*, Brown, Wernerian Mem., II, p. 520, pl. 24, f. 5; *Helix subcarinata*, Montagu, p. 438, pl. 7, f. 9; Turton, Brit. Fau., p. 187.

Shell subovate, subpellucid, milk-white; with four moderately elevated volutions, well defined by a hollow suture, below which is a spiral groove; body large, considerably inflated; spire small, the volutions of which are placed somewhat laterally; on the slightly rounded base there are three concentric, elevated, smooth ridges, the innermost emanating from the umbilicus, which is large and deep, and terminating behind the pillar lip; the outermost forms a zone around the margin of the base, the central ridge being nearly equidistant between the others; on the upper part of the body are two spiral ridges, the superior one running spirally to the middle of the second volution; the whole upper surface between the ridges is covered with very fine undulating, longitudinal striæ, and which is divergent on the base, emanating from the umbilicus; aperture suborbicular; outer lip thick, considerably expanded; inner lip reflected, and spreading a little over the umbilicus. Diameter at the base not an eighth of an inch; height a little more than a sixteenth. It is a strong shell for its size.

Found in Salcomb Bay, Bigberry Bay, and Milton Sands, Devonshire; the south coast of Kent; and in drifted sand, Portmarnock, Ireland. It is a rare British shell.

#### Subdivision II.—Destitute of an Umbilicus.

8. *T. Zizyphinus*, pl. XI, f. 16, 17, 18, 19, 21, 22, 24, and 29.—First Ed., pl. 45, f. 16, 17, 18, 19, 21, 22, 24, and 29; Pennant, Brit. Zool., IV, p. 126, pl. 80, f. 103; Donovan, Brit. Sh., II, pl. 52; Montagu, p. 274; Turton, Brit. Fau., p. 177; Fleming, Brit. An., p. 323; Brown, Ency. Brit., VI, p. 452; Ib. Ency. Edin., II, p. 553, pl. 55, f. 8; Lamarck, VII, p. 23.

Shell conic, strong, with seven or eight flat volutions, gradually tapering to a very fine pointed apex; the whole shell covered by a series of spiral ridges; the lower one in each volution is broader, and more promi-



nent than the others; beneath these is a well-defined suture; these ridges are crossed by numerous very fine, waved, obliquely longitudinal, nearly obsolete striæ; colour livid, reddish citron, or purplish, streaked with longitudinal broad, waved blotches of pinkish red; these are more regular and distinct on the basal rib of each volution, forming an elegant spiral girdle from the base to the apex; aperture somewhat compressed and angulated; inside highly pearly; base flattish, with concentric ridges, crossed by obsolete divergent striæ or lines of growth, generally of a paler colour than the rest of the shell, and usually destitute of spots; outer lip thin, inner lip a little reflected and thickened, somewhat concave behind, with a slight notch at its junction with the outer lip. Length and breadth usually about an inch, but we found it one inch and three-eighths in dimensions, in Dublin Bay and Portmarnock, Ireland. It inhabits the coasts of Cornwall, South Devon, and Tenby, Wales; Rothsay and Loch Ridan, Scotland.

Figs. 17 and 18.—A variety presented to us by Dr Leach, who obtained it from George Lyons, Esq. of Tenby, Wales, where it is not uncommon.

Figs. 21 and 22.—A beautiful smooth variety, dredged in deep water off Sunderland, by Mr Dixon of Bishopwearmouth. In Lady Jardine's Cabinet.

Figs. 24 and 29.—Another smooth variety, dredged in deep water off the county of Down, Ireland.

9. *T. discrepans*, pl. XI, f. 20 and 23.—First Ed., pl. 45, f. 20 and 23; Brown, Wernerian Memoirs, II, p. 501, pl. 24, f. 4, 4.

Shell conic, with seven rounded volutions, well-defined by a hollow, broad, and deep suture, and terminating in a pointed apex; the whole shell covered with somewhat obsolete spiral ridges; a deep groove emanates from the centre of the outer lip, and runs spirally to the apex in the middle of the volutions; aperture subquadrangular; nacreous within; circumference at the base nearly an inch, height seven-eighths.

This species has much the aspect of *Trochus Zizyphinus*, but differs from it in the deep spiral groove; it is also shorter in proportion to the breadth at the base, and more obtuse at the apex.

One specimen only of this shell was found at Holywood, in Belfast Lough, by Miss Templeton of Belfast, and was in her Cabinet.

10. *T. papillosus*, pl. XI, f. 13, 14.—First Ed., pl. 45, f. 13, 14; Da Costa, p. 38, pl. 3, f. 3; Donovan, Brit. Sh., pl. 127; Brown, Wernerian Memoirs, II, p. 519; Ib., Ency. Brit., VI, p. 452; Fleming, Brit. An., p. 323; *Trochus tenuis*, Montagu, p. 275, pl. 10, f. 3.

Shell conic, thin, fragile; with eight slightly inflated volutions, terminating in a fine pointed apex, and separated by a very slender suture; whole shell ornamented with numerous regular series of papillose, spiral zones, each separated by a groove, in which is placed a raised, central, spiral line, crossed by very close and minute longitudinal, nearly obsolete striæ; the volutions are defined by a larger and more elevated zone of papillæ at their base, which on the body forms a distinct keel; base somewhat tumid, with numerous spiral grooves and ridges, on which latter the papillæ are less distinct than above; the whole are crossed by numerous, more obvious, divergent striæ; aperture wide, quadrangular, grooved, and nacreous within; outer lip very thin; columella thick, with an obsolete plication near its base, where it is slightly reflected, with a concavity behind; colour citron, or pinkish-brown, the zones on the base studded with rather regular, oblong, or arrow-shaped, reddish-brown spots. Length an inch and a quarter; breadth rather less. Found at Pool and Weymouth, Dorsetshire; Cornwall; north coast of Devonshire, from whence we obtained the splendid specimens which we have figured, measuring an inch and a half in length and breadth, found also in Dublin Bay, and in deep water off Bray, Ireland.

11. *T. striatus*, pl. XI, f. 25, 26.—First Ed., pl. 45, f. 25, 26; *T. erythroleucos*, Brown, Ency. Brit., VI, p. 452; Turton's Linné, V, p. 463; Lamarck, VII, p. 30; *Trochus striatus*, Montagu, p. 278; Fleming, Brit. An., p. 323; *Trochus conicus*, Donovan, Brit. Sh., pl. 155, f. 1; Turton, Brit. Fau., p. 177; *Trochus parvus*, Da Costa, p. 41.

Shell conic, strong, with six flat volutions, hardly defined by the suture, and tapering to a fine point, with eight or nine strong spiral striæ on each volution, intersected by very minute longitudinal striæ, most conspicuous on the body and base, which is flattened and somewhat concave with circular ridges; cinereous, or reddish flesh-coloured, with large longitudinal, interrupted, zigzag dull crimson, or purplish-brown clouds; broad in some specimens and narrow in others; aperture obliquely quadrangular, pearly within, except at the margin of the outer lip, which

is rather strong for its size; columella thick, a little reflected above and narrower beneath, with a slight concavity behind. Length three-eighths of an inch; breadth nearly the same.

Found in sand at Falmouth, Cornwall; Salcomb Bay, Devonshire, and Pool, Dorsetshire. It is a rare British shell.

12. *T. exiguus*, pl. XI, f. 27, 28.—First Ed., pl. 45, f. 27, 28; Montagu, p. 277; Turton, Brit. Fauna, p. 177; *Trochus conulus*, Da Costa, p. 40, pl. 2, f. 4, 4; Brown, Ency. Brit., VI, p. 452; Donovan, Brit. Sh., I, pl. 8, f. 2; Lamarck, VII, p. 24; *Trochus exasperatus*, Pennant, Brit. Zool., IV, p. 126, No. 105.

Shell conic, strong, with six flat produced volutions, separated by a strong spiral belt at the base of each, and terminating in a fine pointed apex, each volution ornamented with four or five well-defined spiral crenated ridges, which being cut diagonally with strong striæ, give them the appearance of twisted cord, with deep intervening grooves, crossed by strong oblique striæ; base slightly rounded, with strong circular ridges, striated in the same direction, and crossed by divergent, nearly obsolete striæ; aperture obliquely quadrangular, whitish, pearly within; outer lip strong; columella thickened and pearly, with an obsolete tooth-like process near its base; colour various, cinereous, brown, dull purplish-brown, sometimes reddish, and spotted with white; apex almost constantly of a deep crimson, which frequently extends to the second volution; sometimes the spiral zone at the base of the volutions is ornamented with square crimson spots. Length rarely three-eighths of an inch; breadth a quarter of an inch.

This and the preceding species have not unfrequently been confounded, but may at once be distinguished from the *T. striatus* by its being much more produced, in the spiral ridges being crenated, the base being rounded, the tip of the spire almost invariably crimson, and the inside of the aperture very slightly nacreous.

Found on the Sussex and Devonshire coasts, and at Treryn Cove, near the Land's End, Cornwall. Montagu found it on the shore between Weymouth and Portland. It is a rare and very local British species.

13. *T. crassus*, pl. XI, f. 6, 7.—First Ed., pl. 45, f. 6, 7; Montagu, p. 281; Brown, Ency. Brit., VI, p. 452; Ib., Wernerian Memoirs, II, p. 519; Turton, Brit. Fau., p. 177; Fleming, Brit. An., p. 322; *Turbo lineatus*, Da Costa, p. 100, pl. 6, f. 7; Donovan, Brit. Sh., II, pl. 71.

Shell subconic, very thick and strong, with five rounded volutions, separated by a well-defined suture, apex pointed, but not sharp; base somewhat produced and rounded at its edge; aperture pearly within; suborbicular, somewhat angulated at the junction of the outer lip and pillar, and rounded next the outside; outer lip acute, its inner margin dark purplish brown; columella smooth, white, or nacreous, with a blunt tooth-like process below its centre; and a slight groove behind the columella, and in others it is slightly subumbilicate; outside coarse and wrinkled; colour cinereous, or light fawn, covered with fine, close-set, zigzag lines of purplish-brown, and sometimes of a blackish purple; a white semilunar patch covers nearly half of the base. Length an inch, breadth somewhat less.

This species is subject to some variation in shape; some are more conic, and the volutions more rounded and tumid than others.

Found on the coasts of Cornwall, Devonshire, Hampshire, Caernarvonshire, Wales; Dublin Bay, Killough, and plentiful on the rocks at Limerick, Ireland.

## FAMILY II.—SCALARIDES.

Shell devoid of plaits or folds on the columella; margins of the aperture united in a circular form.

### GENUS 21.—DELPHIONOIDEA.—Brown.

Spire depressed, surface smooth, divested of spinous processes; aperture orbicular, or nearly so, and not enveloping the body volution.

#### Subdivision 1.—Volutions Dextral.

1. *D. Unispirala*, pl. VIII, f. 32, 33.—First Ed., pl. 51, f. 32, 33. *Helix unispiralis*; Montagu, p. 443; Maton and Racket, Linn. Trans., VIII, p. 201; Walker, Minute Shells, f. 27.

Shell glossy white and opaque, with one volution, umbilicate on both sides; aperture orbicular. Diameter scarcely a line.

Found at Sandwich, and is very rare.



2. *D. depressa*, pl. VIII, f. 35, 36. First Ed., pl. 51, f. 35, 36.

*Helix depressa*; Montagu, p. 439, pl. 15, f. 5; *Turbo depressus*; Turton, Brit. Faun., p. 185; *Skenea depressa*; Fleming, Brit. An., 313.

Shell subdepressed, subpellucid, with three or four volutions; spire well defined by the suture, but scarcely elevated above the body, and slightly wrinkled across; apex distinct, but not produced; body cylindrical, base rounded, with a large umbilicus, in which the superior volutions are seen; aperture obicular, the lips continuous, even all round, and not clasping the body, but spreading slightly upon it; colour of a light brown. Diameter hardly a line.

Found at Whitsand Bay and Falmouth, Cornwall; Burrow Island, Devonshire; and at Dunbar, Frith of Forth.

3. *D. serpuloides*, pl. VIII, f. 40, 41; First Ed., pl. 51, f. 40, 41.

*Helix serpuloides*; Montagu, Sup., p. 147, pl. 21, f. 3; *Skenea serpuloides*; Fleming, Brit. An., p. 313.

Shell compressed, glossy, white, with three smooth volutions; spire but little elevated above the body, and terminating in a small but not pointed apex; aperture orbicular, slightly adhering to the body, and turning considerably downwards, forming a large and deep umbilicus, in which the superior volutions are distinctly visible. Diameter not a line.

Found on the Devonshire coast, extremely rare.

This bears some resemblance to the *D. depressa*, but differs in the slight connection of the volutions, and their more cylindrical form beneath; it differs also in colour.

#### Subdivision II.—Volutions Sinistral.

4. *D. resupinata*, pl. VIII, f. 45 and 47; First Ed., pl. 51, f. 45 and 47.

*Helix resupinata*; Montagu, p. 444; Walker, Minute Shells, f. 24.

Shell with three reversed volutions, and terminating in an obtuse apex; aperture large, oval, and not spreading on the body.

#### GENUS 22.—SPIRA.—Brown.

Shell smooth, nearly globular, or semiovate; spire small in proportion to the size of the body, and depressed; aperture enveloping the body.

1. *C. globosa*, pl. VIII, f. 34 and 37; First Ed., pl. 51, f. 34 and 37; *Delphinoidea globosa*.

*Helix globosa*; Montagu, p. 444; Maton and Racket, Linn. Trans., VIII, p. 203; Walker, Minute Shells, f. 25; Turton, Brit. Faun., p. 190.

Shell smooth, white, opaque, glossy, and round, with two volutions, the superior one slightly elevated above the body; aperture suborbicular, and clasping the body; outer lip thin, entire. Diameter not a line.

Found on the coast of Sandwich.

2. *C. nitidissima*, pl. VIII, f. 42 and 44.—First Ed., pl. 51, f. 42 and 44; *Delphinoidea nitidissima*.

*Helix nitidissima*; Montagu, p. 447; Maton and Racket, Linn. Trans., VIII, p. 205; Adams, Linn. Tr., V, p. 6, pl. 1, f. 22, 23, 24.

Shell nearly globular: extremely glossy and horn coloured; pellucid, with two volutions, finely striate transversely; base rounded with a small, round umbilicus; aperture semilunar, enveloping the body; outer lip plain. Diameter not a line.

Found on the coast of Pembrokeshire.

3. *C. coarctata*, pl. VIII, f. 43 and 52.—First Ed., pl. 51, f. 43 and 52; *Delphinoidea coarctata*.

*Helix coarctata*; Montagu, p. 447; Maton and Racket, Linn. Trans., VIII, p. 205; Walker, Minute Shells, f. 30.

Shell nearly globose, white, and pellucid; with two volutions; body very large, superior volution extremely small; aperture subrotund, embracing the body contracted at the base of the columella; outer lip thin and plain; an extremely small umbilicus. Diameter not a line.

Found at Sandwich, very rare.

4. *C. reticulata*, pl. VIII, f. 38, 39.—First Ed., pl. 51, f. 38, 39; *Delphinoidea reticulata*.

*Helix reticulata*; Montagu, p. 444; Maton and Racket, Linn. Trans., VIII, p. 203; Adams, Micr., pl. 14, f. 12; Walker, Min. Sh., f. 26.

Shell semiovate, subglobular, white, and pellucid, with two volutions, spirally and transversely striate; aperture nearly orbicular, clasping the body; margin of the outer lip plain, and divested of striæ; base with a subumbilicus. Diameter not quite a line.

Found at Reculver; extremely rare.

5. *C. bicolor*, pl. VIII, f. 50, 51.—First Ed., pl. 51, f. 50, 51; *Delphinoidea bicolor*.

*Helix bicolor*; Montagu, p. 447; Maton and Racket, Linn. Trans., VIII, p. 205; Adams, Linn. Trans., V, p. 4.

Shell with two smooth, pellucid, but not glossy volutions, of a yellowish horn colour; base provided with a very small umbilicus.

This species differs from the *C. nitidissima*, in being perfectly smooth, not glossy, and in the inside of the shell being white.

6. *C. tubulata*, pl. VIII, f. 46.—First Ed., pl. 51, f. 46; *Delphinoidea tubulata*.

*Helix tubulata*; Montagu, p. 446; Maton and Racket, Linn. Trans., VIII, p. 204; Adams, Linn. Trans., III, p. 67.

Shell globular, with three longitudinally striate volutions, and a marginal tube at the base in place of an umbilicus, extending beyond the base of the shell.

7. *C. variegata*?

*Helix variegata*; Montagu, p. 446; Adams, Linn. Trans., III, p. 67.

Shell consisting of four subpellucid, smooth volutions, with red lineations; the body ventricose, and imperforate at the base; margin of the aperture very much spread.

#### GENUS 23.—PLANARIA.—Brown.

Shell discoidal; spire depressed; the volutions apparent on both sides, and encompassed by the body, or outer one; aperture transverse and semilunar, and not clasping the body.

1. *P. pellucida*, pl. VIII, f. 53-54-55.—First Ed., pl. 51, f. 53-54-55.

Shell depressed, very thin, pellucid, white, and extremely glossy, consisting of four rounded volutions, slightly wrinkled across, visible on both sides of the disk; the one next the body above nearly parallel with it, the inner ones descending into a deep umbilicus; the centre volutions encompassed by the body; aperture semilunar, transverse, and oblique; outer lip thin, pillar lip adhering to and slightly reflected on the columella; base rounded. Diameter a quarter of an inch; thickness not an eighth.

Found on the coast at Dunbar, by General Bingham, and in his cabinet; and we have lately met with it in the same locality.

2. *P. alba*, pl. VIII, f. 48-49.—First Ed., pl. 51, f. 48-49.

Shell depressed, with four milk-white rounded volutions, visible on both sides, encompassed by the body; the second ones very slightly elevated above the sides of the body, the central ones sinking into a deep umbilicus; base rounded, the volutions retiring towards the middle, and winding to a small central umbilicus; the whole crossed by very minute lines of growth, or obsolete striæ; aperture oblique, large, suborbicular, and white within; outer lip thin and plain; pillar lip adhering to the columella. Diameter three-eighths of an inch, and about half that thickness.

Found on the beach betwixt St Abb's Head and Dunbar by General Bingham, and in his cabinet; and we have lately found it close to Dunbar.

This species has much the aspect of *Planorbis cornus*, but differs from it in the volutions of the apical side, being the reverse of that shell in the inside being parallel with the sides of the body, and in the others being thicker and less sunk than the under side of the *P. cornus*, in its young state.

#### GENUS 24.—SCALARIA.—Lamarck.

Shell turreted; volutions gibbous, very distinct, sometimes quite separated, with a spiral void in place of a suture, with close or distant, longitudinal, elevated, acute, oblique ribs, sometimes so thickened as to present a varicose appearance, but in a few instances so depressed that they hardly appear above the surface; aperture for the most part orbicular, or generally a little longer than broad, with its margin united all round, thickened, and reflected, particularly so in such species as the volutions are apart from each other; lower part of the columella indistinctly canaliculate; aperture provided with a thin, horny, spiral operculum.

1. *S. communis*, pl. VIII, f. 13.—First Ed., pl. 51, f. 13; *Scalaria communis*; Lamarck, VI, pl. 2, p. 228; *Scalaria clathrus*; Fleming, Brit. An., p. 311; *Turbo clathrus*; Pennant, Brit. Zool., IV, p. 129, pl. 82, f. 3; Maton and Racket, Linn. Trans., VIII, p. 170; Montagu, Sup. p. 120; *T. clathratulus*; Donovan, Brit. Sh., pl. 28, upper figs.; *Turbo scalaris*; Montagu, p. 296.

Shell with from nine to twelve taper, turreted, deeply divided volutions, terminating in an acute apex; the whole length of the shell invested with from nine to twelve regular, longitudinal, oblique, high, distant, membranaceous ribs; aperture orbicular, its margin thickened by a rib that surrounds it; colour white, sometimes with a few transverse fillets of brown or brownish red. Length an inch and a half; diameter at the base half an inch; provided with a coriaceous, black, and spirally striated operculum.

Found at Falmouth, Cornwall, the south coast of Devonshire, Dorsetshire, and Kent; Montagu procured it alive, at the Salt-Stone, estuary of Kingsbridge, of a superior size; found also in Dublin Bay and Portmarnock, Ireland, plentiful; and at Dunbar, sparingly, according to Capt. Laskey.

2. *S. clathratulus*, pl. VIII, f. 12.—First Ed., pl. 51, f. 12; *Turbo clathratulus*, Turton's Linnaeus, IV, p. 500; Ib. Brit. Fauna, p. 179; Adams, Miero., pl. 14, f. 19; Montagu, p. 297; Sup., p. 124; Maton and Racket, Linn. Trans., VIII, pl. 5, f. 1; Walker, Min. Sh., f. 45.

Shell with five or six taper, turreted, deeply divided volutions; with from fifteen to seventeen close-set, oblique, longitudinal, very delicate ribs; aperture orbicular; lip thickened by a rib. Length about half an inch.

Found sparingly on the south Devonshire coast, Weymouth, and Dunbar.

3. *S. Turtoni*, pl. XXI,\* f. 1, 2; *Scalaria Turtoni*, Turton, Conch. Dic., p. 208, f. 97; Fleming, Brit. An., p. 311; Ency. Meth., pl. 451, f. 3; *Turbo clathratus*, var., Donovan, Brit. Sh., pl. 28, lower fig.

Shell with about twelve deeply divided volutions, and twelve longitudinal strong ribs, the intermediate spaces spirally striate; colour pale brown, with two or three dark reddish brown spiral bands, and the ribs crossed by the same colour; aperture orbicular; lips white, thickened by a rib, a little reflected. Length two inches; breadth nearly three-quarters.

Found in Dublin Bay and Balbriggan, Ireland.

### FAMILY III.—PLICACEA.

Shell with the aperture somewhat contracted, and the columella plaited.

#### GENUS 25.—TORNATELLA.—Lamarck.

Shell oval, oblong, or cylindrical, usually transversely striate, and destitute of epidermis; spire generally very short, and somewhat obtuse, but elongated and subacute in some species; aperture longitudinal, elongated, entire, with the outer lip simple, acutely edged, and sometimes with a slight contraction and incrassation; inner lip thin, and but slightly spread; columella spiral, with one or several folds at its base.

1. *T. fasciata*, pl. VIII, f. 4, 5.—First Ed., pl. 51, f. 4, 5; *Tornatella fasciata*, Lamarck, VI, pt. 2nd, p. 220; *Tornatella tornatilis*, Fleming, Brit. An., p. 336; *Voluta tornatilis*, Montagu, p. 231; Pennant, Brit. Zool., IV, p. 117, pl. 71, f. 86; Donovan, Brit. Sh., II, pl. 57; Turton, Brit. Faun., p. 170.

Shell oval; body large in proportion to the spire; with eight gently rounded volutions, abruptly tapering to an acute apex, and well defined by a deep channelled suture; upper part invested by

five, somewhat irregular, spiral striae, descending to the base of the lower band, from whence to the base of the body it is provided with a series of five transverse ribs, the interstices between them crossed by strong longitudinal striae; aperture long, narrow, much straitened above, and widened below, by the narrowing of the basal region of the body; outer lip thin, plain above, but erenulated on its lower margin by the basal ribs; columella provided with one plait near the retal extremity; colour purplish red, the body volution ornamented with two transverse, spiral, white bands, usually bordered with a darker shade of purplish red, and the upper white band proceeds continuously to the apex, on each side of the suture; columella and lower portion of the outer lip, within, in full grown shells, of a rich rusty brown. Length three-quarters of an inch.

Found at Teignmouth and Exmouth, Devonshire; Weymouth, Dorsetshire; Anglesea and Longhorne, Wales; Portmarnock, Ireland; Dunbar, Tyne Sands and Leith Roads, Frith of Forth.

#### GENUS 25.—JAMINIA.—Bruguière.

Shell ovate, destitute of epidermis; spire generally short; aperture elongated; pillar lip furnished with plaits or teeth; outer lip smooth and entire, or toothed in some species.

##### Subdivision I.—Without teeth on the outer lip.

1. *J. plicata*, pl. VIII, f. 10.—First ed., pl. 51, f. 10; *Voluta plicata*, Montagu, p. 325, pl. 21, f. 2; Turton, Brit. Fau., p. 170; *Odostomia plicata*, Fleming, Brit. An., p. 310.

Shell smooth, glossy, subpellucid, and white; with six somewhat slender, well defined, volutions, terminating in an obtuse apex; aperture suboval, somewhat contracted above, and rounded at the lower extremity; outer lip sharp and even; inner lip thickened, and provided with a single tooth-like plait. Length an eighth of an inch; breadth one-third its length.

Found in sand from Salcomb Bay; but rare.

2. *J. interstincta*, pl. IX, f. 10.—First Ed., pl. 50, f. 10; *Turbo interstinctus*, Adams, Linn. Tr., III, p. 66, pl. 13, f. 23, 24; Montagu, p. 324, pl. 12, f. 10; *Voluta interstincta*, Turton, Brit. Fauna, p. 170; *Odostomia interstincta*, Fleming, Brit. An., p. 310.

Shell with five white, glossy, rather flat, taper volutions, separated by a small suture, and terminating in an obtuse apex; the whole shell covered by fine longitudinal ribs; outer lip entire, thin; pillar lip slightly reflected, and provided with a single tooth. Length one line; breadth a third of its length.

Found in sand from Bigberry Bay, Devonshire; but very rare.

3. *J. unidentata*, pl. IX, f. 44, 45.—First Ed., pl. 50, f. 44, 45; *Turbo unidentatus*, Montagu, p. 324; *Voluta unidentata*, Turton, Brit. Fa., p. 170; *Odostomia unidentata*, Fleming, Brit. An., p. 310.

Shell conic, strong; with five or six slightly inflated, white, smooth, glossy, subpellucid volutions, terminating in rather an obtuse apex; aperture suboval, slightly contracted above: outer lip plain; columella furnished near the middle with a single tooth. Length two-tenths of an inch; breadth about one-half its length.

Found in deep water in Salcomb Bay, Devonshire; and at Dunbar, Frith of Forth.

4. *J. longiuscula*, pl. VIII. f. 8.—First Ed., pl. 51, f. 8; *Buccinum longiusculum*, Walker, Min. Sh., f. 60; Adams, Micros., pl. 14, f. 26.

Shell taper: consisting of six smooth, glossy, pellucid, gradually tapering volutions, well defined by the suture, and terminating in an acute apex; aperture oblong, slightly contracted above, and widened beneath; outer lip thin, even; columella smooth, with a tooth-like process near its centre. Length an eighth of an inch; breadth not half its length.

Found in Faversham Creek.

5. *J. obtusa*, pl. IX, f. 38.—First Ed., pl. 50, f. 38.

Shell subcylindrical; with five white, glossy, somewhat tumid, and gradually tapering volutions, terminating in an obtuse apex; with five longitudinal ribs; aperture subrotund, slightly contracted above; outer lip plain; columella with a prominent, oblique, tooth-like process near its centre. Length an eighth of an inch; breadth not half its length.

Found at Dunbar, by General Bingham.

6. *J. pullus*, pl. IX, f. 11.—First Ed., pl. 50, f. 11.

Shell subconic; with six slightly rounded volutions, terminating in an obtuse apex; the whole shell invested by five flat spiral ribs; aperture subovate, slightly contracted above; outer lip plain; columella furnished with a sharp tooth-like process near its centre; whole shell of a pale flesh colour, and not glossy.

Found by me on the beach at Montrose.

7. *J. alba*, pl. VIII, f. 18.—First Ed., pl. 51, f. 18; *Voluta alba*, Montagu, p. 235; Ib., Sup., p. 101; Walker, Min. Sh., f. 61; Adams, Micros., pl. 14, f. 27; Maton and Racket, Linn. Trans., VIII, p. 130; Turton, Brit. Fauna, p. 170.

Shell opaque and glossy; with four finely striated volutions; aperture long, narrow, straitened above, and rounded beneath. Length a tenth of an inch.

Found at Sandwich and Shepey Island.

8. *J. insculpta*; *Turbo insculptus*, Montagu, Sup., p. 129; *Odostomia insculpta*, Fleming, Brit. An., p. 310.

"Shell subpellucid, white, and taper; with five or six moderately convex volutions, finely and regularly striated throughout, in a spiral direction; apex obtusely pointed; aperture subovate; pillar lip with a faint duplicature, forming a subumbilicus, and furnished with a small tooth. Length one-eighth of an inch; breadth one-third its length.

"This rare shell, from the coast of Devon, must not be confounded with the *Turbo semistriate*, (*Rissoa semistriate*, p. 11, pl. IX, f. 3,) which is vastly broader in proportion, and is destitute of a tooth."—Montagu.

9. *J. bidentata*, pl. VIII, f. 7.—First Ed., pl. 51, f. 7; *Voluta bidentata*, Montagu, Sup., p. 100, pl. 30, f. 2.

Shell strong, thick, conic, smooth, glossy white; with six or seven volutions, tapering abruptly to an acute apex; a few distant, longitudinal, wrinkles undulate the suture; body large, occupying two-thirds the length of the shell; aperture narrow, somewhat oblique, contracted above, and rounded below; outer lip thick, plain; columella much thickened, and folding back forms a subumbilicus behind, and provided with three tooth-like plications in front. Length a quarter of an inch; breadth about half its length.

Found plentifully on the south coast of Devonshire; and at Dunbar, Frith of Forth.

#### Subdivision II.—With teeth on the outer lip.

10. *J. denticulata*, pl. VIII, f. 6.—First Ed., pl. 51, f. 6; *Voluta denticulata*, Montagu, p. 234, pl. 20, f. 2; Walker, Min. Sh., f. 50 and f. 53, young; Turton, Brit. Fa., p. 170.

Shell subcylindrical; with seven or eight gradually tapering, flat, semipellucid volutions, terminating in an acute apex; body large, in proportion to the size of the spire; aperture oblong-oval, nearly half the length of the shell; outer lip furnished with two or three tubercles near the margin, and frequently with three or four white denticulations within the margin of the aperture; columella provided with three or four oblique white plicæ, which are much produced, and have a tooth-like appearance. Length nearly half an inch; breadth not a quarter.

This species is subject to some variety in the denticulation<sup>s</sup> on the outer lip; some have more and others less, and young shells are destitute of them; the plications on the columella also vary from two to four, but the usual number is three.

Found on the shore at Plymouth, and other parts of the south Devonshire coast; at Barnstable and Isracomb, in the north; near Aberavon, Wales; and at Southampton; Dublin Bay, Ireland; and Dunbar, Frith of Forth.

11. *J. quinquedens*, pl. VIII, f. 11.—First Ed., pl. 51, f. 11.

Shell strong, thick, conic, smooth, white, and opaque; with six volutions; spire tapering abruptly, and terminating in an obtuse apex; aperture a little oblique, narrow, contracted above, and rounded below; outer lip thin, provided internally with five tooth-like processes, the upper one largest; columella slightly thickened, and furnished with two strong, acute, prominent teeth-like processes in front, the upper one cleft. Length a quarter of an inch; breadth about half its length.

I found this shell on the beach at Prestonpans, nine miles east of Edinburgh.

#### GENUS 27.—COMINIA.—Brown.

Shell elongated, tapering to both extremities; spire of medium length; aperture elongated and narrow; columella furnished with several oblique, spiral grooves, or folds, and subcanaliculate at the base.

1. *C. hyalina*, pl. VIII, f. 9.—First Ed., pl. 51, f. 9; *Jaminia hyalina*; *Voluta hyalina*, Montagu, Sup., p. 101.

Shell with six flat, pellucid, smooth volutions, tapering to an obtuse apex, and very indistinctly defined by the extremely small line of the suture; body occupying about half the length of the shell; aperture much elongated and narrow, a little contracted above; base truncated and canaliculated; outer lip smooth, plain, and sharp at the edge; columella with seven or eight fine, oblique, thread-like plications. Length a quarter of an inch; breadth not more than one-third its length.

Found near Dunbar, by Captain Laskey.

#### FAMILY IV.—MACROSTOMA.

Shells auriform, with a very wide spreading aperture, and the margins disunited; destitute of a columella and operculum.



## GENUS 28.—HALIOTIS.—Linnæus.

Shell ear-shaped, ovate, oblong, or nearly round, and depressed; with a very short, flattened, somewhat lateral spire; aperture extremely large, nearly embracing the whole shell, mostly entire, and of an ovate, or oblong form in the adult state; disk having a series of circular, or ovate, perforations running parallel to the columellar or left margin, which commences with a notch; columellar lip usually flattened, or hollow, in front; sometimes with a strongly developed central impression; inside always pearly, exhibiting brilliant iridescent reflections.

1. *H. tuberculata*, pl. XII, f. 2 and 18.—First Ed., pl. 36, f. 2 and 18; *Haliotis tuberculata*, Pennant, Brit. Zool., IV. p. 141, pl. 88, f. 144; Donovan, Brit. Sh., I, pl. 5; Montagu, p. 473; Fleming, Brit. An., p. 362; Turton, Brit. Fauna., p. 196; Brown, Wernerian Memoirs, II, p. 532; Lamarck, VI, pt. 2nd, p. 215.

Shell ovate oblong, flat, with coarse, slightly waved, longitudinal striae, and strong transverse wrinkles, and extremely close, irregular striae; near the inner margin is a produced ridge, extending from the base to the first turn of the spire, and beset with irregularly formed tubercles, decreasing in size as they approach the apex; behind this the margin is rounded, and turns inward; above this is another ridge, in which there is a series of large tubercles, which also decrease towards the apex; six or eight of the lower ones being perforated with ovate holes; the upper tubercles imperforate, and flattened at top; aperture very wide and entirely open, concave, transversely crossed by shallow, broad furrows, and highly pearly, exhibiting beautiful iridescent reflections; outer margin thin; columellar lip broadly reflected, forming a flattened rim round the left side of the disk, nacreous like the rest of the interior, and ending about an inch from the base. Length varying from three to four inches.

Dead shells have been found on the coasts of Sussex, Dorsetshire, and Devonshire. It is found abundantly adhering to rocks, near low water mark, in Guernsey. Mr. Templeton, of Belfast, procured one specimen by the dredge at Springfield, county of Down, Ireland, and he assured me that several specimens had been picked up on these shores.

## GENUS 29.—SIGARETUS.—Lamarck.

Shell suborbicular, subauriform, depressed; spire submarginal, much flattened, and sometimes compressed, consisting of not more than two or three volutions; aperture entire, much dilated, oblong-ovate, its edges disunited at the upper extremity, in consequence of the outer lip embracing the base of the last volution; inner lip short, spirally twisted, in general slightly reflected at its upper part, sometimes to such an extent as to produce a small umbilicus; within the aperture are two muscular impressions, the one in the upper, and the other in its lower extremity.

1. *S. Haliotoideus*, pl. II, f. 1, 2.—First Ed., pl. 44, f. 1, 2; *Sigaretus haliotoideus*, Lamarck, pt. 2nd, p. 208; *S. perspicuus*, Forbes, Mal. Mon., p. 29; *Bulla haliotoidea*, Montagu, p. 211, pl. 7, f. 6, and Vignette 2, f. 6; Brown, Ency. Brit., VI, p. 433; Turton, Brit. Faun., p. 168.

Shell suboval, extremely thin, pellucid, white, glossy, and

smooth; very slightly wrinkled longitudinally by the lines of growth; spire very small and obtuse, consisting of two obliquely twisted volutions; aperture oval, very large, but not quite extending to the apex; body very large, and exposing the whole interior; outer lip thin; inner lip concave, and slightly inflected. Length three-quarters of an inch; breadth half an inch.

Found in Salcomb Bay and Torcross, Devonshire; Studland beach and Weymouth, Dorsetshire; Downshire coast, Ireland; and in the Frith of Forth, Scotland. It appears to inhabit deep water.

2. *S. flexilis*, pl. II, f. 3, 4.—First Ed., pl. 44, f. 3, 4; *Bulla flexilis*, Montagu, Sup., p. 168; Laskey, Wernerian Memoirs, I, p. 396, pl. 8, f. 6.

Shell suboval, pellucid; reddish horn coloured; extremely thin, transparent, with pretty strong longitudinal wrinkles; spire very small, consisting of one obliquely twisted volution; aperture oval, extending nearly to the apex; outer lip thin; inner lip slightly inflected. Length not quite half an inch; breadth an eighth and a half.

This may be distinguished from the *S. Haliotoides* by its reddish horn colour, in the spire having but one volution, the inflection of the inner lip being only about half the breadth, by the base of the aperture being more acute, and in the wrinkles being much stronger. It is quite flexible when newly extracted from the animal.

Found at Dunbar, by Captain Laskey.

## GENUS 29.—GALERICULUM.—Brown.

Shell semioval; body extremely large, destitute of a columella; spire very small; aperture very large; outer lip and pillar lip continuous, the latter broad and reflected on the body; generally covered with an epidermis.

1. *G. levigatum*, pl. XIX, f. 35 and 38.—First Ed., pl. 38, f. 35 and 38; *Helix levigata*, Donovan, Brit. Sh., III, pl. 105; Montagu, p. 382; Turton, Brit. Faun., p. 195; *Velutina levigata*, Fleming, Brit. An., p. 326; Forbes, Mal. Mon., p. 29.

Shell thin, fragile, suborbicular, flesh coloured; with three volutions; the body extremely large, and the spire very small, and slightly produced, placed laterally, and terminating in a compressed apex; the shell wrinkled transversely, and striated longitudinally, or spirally; covered with a thick, rough, brown epidermis, which is generally elevated into regular, equidistant, membranaceous, spiral ridges; aperture suborbicular, extremely large, inside smooth, glossy, and of a purplish-brown colour; sometimes almost white; outer lip very thin; inner lip somewhat oblique, and reflected on the body; behind which there is a slight groove. Ordinary size three-quarters of an inch in length, and five-eighths in breadth; but found of very superior dimensions at Portmarnock, and other places on the east coast of Ireland, measuring nearly an inch and an eighth in length, and three-quarters in breadth.

Found at Southampton; at Torcross and Salcomb, Devonshire; Studland, Dorsetshire; Falmouth, Cornwall; Teignmouth, Wales; and the Frith of Forth, Scotland.

2. *G. ovatum*, pl. XIX, f. 27, 28.—First Ed., pl. 38, f. 27, 28.

Shell oblong-oval, much inflated; body very large; spire consisting of a single, small, knob-like volution; aperture oval,

rounded above, and slightly contracted below, inside of a fine purple hue; outer lip thin, slightly reflected; inner lip broad, flattened as in *Halotis*, and white; outside covered with a rather smooth fuscous epidermis. Length about a tenth of an inch.

Found by Dr. Leach on the Devonshire coast.

3. *G. Otis*; *Helix apertura patentissima*, Walker, Min. Sh., pl. I, f. 17; *Helix Otis*, Turton, Conch. Dic., p. 70; *Velutina Otis*, Fleming, Brit. An., p. 326.

Shell transversely oblong; with three smooth, semitransparent, glossy volutions; aperture transversely oblong; outer lip thin; inner lip a little thickened and flattish.

#### FAMILY V.—IANTHINIA.

Animal capable of raising itself in the water, and floating.

#### GENUS 30.—IANTHINIA.—Lamarck.

Animal provided with a visicle, attached to its foot, by means of which it can raise itself to the surface of the water, and float on the ocean.

Shell ventricose, subglobose, and subconic; thin, diaphanous, and brittle; aperture subtriangular, produced at its lower region and at its outer side, but is considerably rounded at the angle formed by the union of the upper and lower halves of the outer lip; columella straight, and elongated beyond the base of the outer lip; with the inner lip reflected over it; the outer lip formed into an angular sinus, by the projection of its upper half.

1. *I. communis*, pl. VIII, f. 1, 2.—First Ed., pl. 51, f. 1, 2; *Ianthina communis*, Lamarck, VI, pt. 2nd, p. 206 Fleming, Brit. An., p. 326; *Ianthina fragilis*, Ency. Meth., pl. 456, f. 1, a, b; *Helix ianthina*, Gmelin, Linné, 3645, No. 103; *Helix ianthina*, Brown, Wernerian Memoirs, II, p. 525; Ib. Ency. Brit., VI, p. 460, pl. 155, f. 6.

Shell subconic, umbilicate; body extremely large; spire very small, consisting of three somewhat inflated volutions, separated by a deep suture, terminating in an obtuse apex, on the pinnacle of which is inserted a very small bead-like process, of a pearly lustre; the centre of the body produced into a rounded, subcarinated ridge; base produced; aperture subtriangular, smooth and glossy within, much produced below; outer lip greatly expanded, thin, and acute: inner lip straight, somewhat reflected over the small umbilicus; whole shell covered with undulous, rather wide spiral striæ, and crossed by strong irregular striæ, following the direction of the lines of growth; colour of a reddish purple, or lilac, the superior volutions whitish. Length upwards of an inch; breadth nearly an inch and a quarter.

Many hundreds of this shell were found alive at Portrush, county of Antrim, Ireland, by Mrs. Clewlow, and Miss Kelly, of Belfast, after a storm. Some of them floated on the surface of the sea, and were buoyed up by the reticulated, viscous membrane which is attached to the foot of the animal. It was afterwards found alive in Bantry Bay, by Miss Hutchins, and has since been met with on various parts of the coast of Ireland, and Wales.

2. *I. exigua*, pl. VIII, f. 16, 17; *Ianthina exigua*, Lamarck, VI, pt. 2nd, p. 206; Ency. Method., pl. 456, f. 2, a, b.

Shell ovate-conical, very thin, subhyaline, with four rounded volutions; spire produced, terminating in a subacute apex, and elegantly striated longitudinally; aperture triangular; pillar lip curved, and terminating in a produced, oblique point; the whole shell of a beautiful reddish violet colour. Length two lines and a half; breadth two lines.

Found by my friend R. J. Shuttleworth, Esq., at Conomaura, west coast of Ireland.

#### FAMILY VI.—NERITACEA.

Shell subglobose, or oval; destitute of a columella; the outer lip margined and transverse; aperture enclosed by an operculum. They inhabit both the sea and fresh waters.

#### GENUS 31.—NATICA.—Adamson.

Shell subglobose, oval, or oblong; umbilicate; spire short, sometimes very short, with the apex very rarely pointed; aperture large, semicircular, and very seldom effuse; outer lip sharp edged, smooth within; columellar lip oblique, destitute of teeth, generally thickened, and sometimes spread thickly over the umbilicus; umbilicus usually large, having a spiral callosity within, which sometimes increases so as to cover the umbilicus: it is sometimes very small, and in a few instances nearly obsolete, so much so, as to be hardly perceptible; operculum testaceous in some species, and horny in other.

1. *N. monilifera*, pl. XIII, f. 1, 2, 8, and 10.—First Ed., pl. 43, f. 1, 2, 8, and 10; *Natica monilifera*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 196; Forbes, Mal. Mon., p. 29; *N. glaucina*, Fleming, Brit. An., p. 319; *Nerita glaucina*, Donovan, Brit. Sh., I, pl. 20, f. 1; Brown, Ency. Brit., VI, p. 462; Maton and Racket, Linn. Tr., VIII, p. ; Montagu, Test. Brit., p. 469; Turton, Brit. Fa., p. 195.

Shell subglobose, strong, smooth, glossy; spire small, consisting of six somewhat inflated, rapidly decreasing volutions, slightly flattened above, and well defined by the suture; body very large in proportion to the spire, and ventricose; aperture suboval and sublunate; outer lip thin and even, and considerably protruded at its juncture with the body; pillar lip thick, callous, broadly spread over the columella above, narrowed beneath, and slightly reflected over the umbilicus, which is large, deep, and striated internally; whole shell covered with minute, nearly obsolete, irregular, longitudinal striæ, which are only perceptible by the aid of a lens; colour sometimes livid, or purplish, but for the most part ferruginous, or chestnut, with a series of longitudinal purplish-brown streaks on the superior portion of the volutions; operculum horny, very thin, transparent, and elastic, with divergent striæ. The young shell, f. 1, 2, is generally ornamented with a series of streaks, or girdles of spots, or zig-zag lines. Size varying from an inch and a half to two inches in length; and from an inch and a quarter to an inch and half in diameter.

Found on most of the British and Irish coasts, and seems to be a deep water species. Mr. Nicol states that he found it buried in sand, at very low tides, in the Frith of Forth.

Mr. Forbes, in his "Malacologia Monensis," says, the body of this species is "minutely striated spirally." I have examined specimens from almost every coast in the kingdom, and have never met with a single specimen with this character.

2. *N. Alderi*, pl. LXI, f. 1; *Natica Alderi*, Forbes, Malacologia Monensis, p. 31, pl. 2, f. 6, 7.

Shell nearly globular; with the spire somewhat produced, acute, consisting of five volutions, divided by a shallow suture; the lower volution largest, and rounded; the upper ones nearly flat; surface smooth, purplish-brown, with two bands of plain yellow, which are each bordered by two narrow bands of white, spotted with brown; lower part of the first volution white; a dark brown band bounds and enters the umbilicus, which is neither grooved nor striated; pillar lip brown and white, slightly reflected on the umbilicus; inside brownish white; operculum corneous.

Young shells have the spire less produced, and the markings paler.

Mr. Forbes says, "this appears to be as generally distributed on our shores as the last (*N. monilifera*), with which it has hitherto been confounded. Indeed, I had for some time (though not without doubts) regarded it as the young of the last, until my attention was directed to its own young by that eminent conchologist, Mr. Alder of Newcastle. Since then I have taken the shell of all sizes, so as to leave no doubt of the identity of the larger specimens with the smaller."

3. *N. intricata*, pl. XIII, f. 13, 16.—First Ed., pl. 43, f. 13, 16; *Natica intricata*, Fleming, Brit. An., p. 319; *Nerita intricata*, Donovan, Brit. Sh., V, pl. 167; *Nerita canrena*, Montagu, Test. Brit., Sup., p. 149.

Shell nearly globular, smooth, shining; body large; spire very small, consisting of three rounded volutions; colour livid, with bands of sagittate, ferruginous lines; umbilicus large, furnished with two divergent, spiral ridges and two grooves; aperture subovate, sublunate; outer lip smooth, thin at the edge; pillar lip broadly reflected on the columella. Size somewhat more than half an inch.

Found at Weymouth by Mr. Donovan, and I dredged a dead shell in the Frith of Forth.

4. *N. Montagui*, pl. XIII, f. 3, 6, 7, 11.—First Ed., pl. 43, f. 3, 6; *Natica Montagui*, Forbes, Mal. Mon., p. 32; *Natica rufa*, Fleming, Brit. An., p. 319; *Nerita rufa*, Montagu, Test. Brit., Sup., p. 150.

Shell ovate, smooth, glossy; body large; spire small, consisting of four rounded volutions, separated by a deep suture, terminating in an obtuse apex; aperture semi-ovate; outer lip thin at the edge; pillar lip white, narrowly reflected on the columella; umbilicus deep, and hollowed by a spiral groove, which terminates in a notch on the columella, and a rib crossing half over the opening; colour livid or purplish, with a white band investing the superior portion of the volutions; inside yellowish orange. Length five-tenths of an inch; diameter one-eighth of an inch.

Inhabits the Frith of Forth, in which locality a beautiful specimen was found by my friend Dr. Knapp of Edinburgh; it is also met with on the north coast of the Isle of Man; but is a rare species.

5. *N. glabrissima*, pl. XIII, f. 9, 12.—First Ed., pl. 43, f. 9, 12; *Nerita glabrissimus*, Brown, Wernerian Mem., II, pt. 2nd, p. 532, pl. 24, f. 12.

Shell nearly globular, pellucid, bluish-white; body large; spire small, flat, consisting of three deeply divided volutions; covered with rather wide, oblique, longitudinal striæ; aperture sublu-

nated; umbilicus long, narrow, and pointed at both extremities; surface covered with fine, regular, longitudinal striæ internally; aperture semilunar; outer lip very thin, acute at the edge; pillar lip slightly reflected on the columella. Size one-eighth of an inch.

Found in Dublin Bay, by Dr. Turton.

6. *N. pallidula*, pl. XIII, f. 12, 19.—First Ed., pl. 43, f. 12, 19; *Natica pallidula*, Fleming, Brit. An., p. 320; *Nerita pallidula*, Donovan, Brit. Sh., I, pl. 16, f. 1, 1; Da Costa, Brit. Sh., p. 51, pl. 4, f. 4, 5; Montagu, Test. Brit., p. 468; Brown, Ency. Brit., VI, p. 462.

Shell orbicular, subpellucid, of a light yellowish brown, or horn colour; body very large; spire extremely small, consisting of two, lateral, hardly produced, but well defined, volutions; aperture semilunate, very large, the external margins of the lip as wide as the shell; outer lip thin, its margin fringed by the epidermis protruding from behind; pillar lip wide, white, concave, with an elongated umbilicus, in its centre, contracted at both extremities; inside glossy; whole shell covered with a rough, brown, epidermis, beneath which the surface is nearly smooth, or faintly wrinkled, longitudinally. Length nearly half an inch; breadth three-eighths.

Found on the coasts of Kent, Dorsetshire, and Falmouth, in Cornwall; and the Frith of Forth; it is, however, a rare species.

7. *N. tuberosissima*, pl. XIII, f. 18, 20.—First Ed., pl. 43, f. 18, 20; *Natica tuberosissima*, Fleming, Brit. An., p. 320; *Nerita tuberosissima*, Montagu, Test. Brit., Sup., p. 150, pl. 29, f. 5.

Shell orbicular; body very large; spire extremely small, consisting of three volutions, hardly elevated above the body, on which there are four elevations broken into tubercles; aperture nearly circular; pillar lip narrowly reflected on the columella; umbilicus large. Diameter somewhat more than one-eighth of an inch.

Said to have been dredged in deep water, in the Frith of Forth, by Captain Laskey, a single live specimen only occurring. It has much the aspect of a foreign shell.

#### GENUS 32.—NERITOIDES.—Brown.

Shell strong, thick, subrotund; spire depressed; aperture nearly round; outer lip almost continuous, having a slight groove only at its junction with the body; destitute of an umbilicus; operculum nearly circular, horny.

1. *N. littoralis*, pl. XIII, f. 14, 15, 21, 22.—First Ed., pl. 43, f. 14, 15, 21, 22; *Nerita littoralis*, Da Costa, Brit. Conch., p. 50, pl. 3, f. 7, and pl. 4, f. 2, 3; Donovan, Brit. Sh., I, pl. 20, f. 2; Montagu, Test. Brit., p. 467; Fleming, Brit. An., p. 318; *Littorina Neritoides*, Forbes, Mal. Mon., p. 19.

Shell semioval, strong, thick; body large; spire small, consisting of three or four volutions, which are placed laterally, and sometimes quite depressed, and in others produced, and divided by a slight suture, hardly perceptible at the apex; aperture sub-orbicular, in some specimens inclining to oval, smooth, white, purple, or orange within; outer lip thin at the edge, considerably thickened within; pillar lip smooth, reflected on the columella; whole shell covered by a thickish epidermis, varying in colour, mostly of a drab, and frequently of an orange-yellow, red, or



brown, beneath which the shell is often prettily mottled, chequered with brown and white, or covered with zig-zag markings, and banded in some instances.

This species is common on most of the British and Irish coasts; adhering to stones and sea weed, between high and low water-mark.

Fig. 22 represents the shell in its young state.

#### GENUS 33.—NERITINA.—Lamarck.

Shell thin, external surface generally smooth, and frequently covered with a strong, horny epidermis; spire mostly very short, sometimes nearly concealed, and at others obsolete; aperture semicircular; outer lip plain, sharp, and destitute of teeth or crenulations internally, but within the lower region of the aperture, it is provided with a somewhat elongated, transverse prominence, which seems the fulcrum for the articulation of the operculum; inner lip flattened, and reflected on the columella, and placed obliquely to the axis of the shell; edge generally short, and dentated or crenulated; as the animal increases in dimensions, that part of the columellar lip is absorbed, which makes it appear as having no columella; operculum testaceous, semicircular, closing the aperture entirely, covered with a horny epidermis, and provided internally at the lower end with a tooth-like appendage, which fits into a hollow between the prominence and lip.

1. *NERITINA FLUVIATILIS*, pl. XVIII, f. 1, 2, 3, and pl. XIII, f. 4, 5.—First Ed., pl. 43, f. 1, 2, 3.

*Neritina fluviatilis*, Turton, Man., p. 13, f. 124; Alder, Mag. Zool. and Bot., II, p. 117; Thompson, Ann. and Mag. Nat. Hist., VI, p. 16; Lamarck, An. San. Vert., VI, pt. 2nd, p. 188; Fleming, Brit. An., p. 321; *Nerita fluviatilis*, Müll, Moll., II, p. 194; Draparnaud, Hist. Moll., p. 31, pl. 1, f. 1; Pfeiffer, I, p. 106, f. 37, 38, 39; Fleming, Edin. Ency., VII, p. 82; Ib., Brit. An., p. 321; Brard, p. 194, pl. 7, f. 9, 10, 12; Turton, Conch. Dic., p. 127; *Neritina fontinalis*, Brard, Hist. Conch., p. 196, pl. 7, f. 11; *Theodoxus Lutetianus*, De Montford, II, p. 351; Da Costa, Brit. Conch., p. 48, pl. 3, f. 8; Pennant, Brit. Zool., IV, p. 141, pl. 88, f. 142; Donovan, Brit. Sh., I, pl. 16, f. 2; Montagu, Test. Brit., p. 470.

Shell suboval, subpellucid; body very large; spire extremely small, oblique, and lateral, consisting of two well defined volutions, and terminating in a minutely small, slightly produced apex; aperture luniform; outer lip thin, sharp at the edge; pillar lip white, flat, and very broadly reflected on the columella; aperture closed by a testaceous operculum, of an orange-yellow colour; whole shell covered with a brown or greenish epidermis, beneath which the surface is glossy and smooth, but longitudinal, minute wrinkles, are observable by the aid of a strong lens; beautifully streaked, spotted, or mottled, with white and purplish-brown, deep umber, or pale brown, and in some instances with spiral bands of either of those colours. Length three-eighths of an inch; breadth a quarter of an inch.

Fig. 3 represents the operculum.

Found in many of the slow running rivers and streams of Great Britain and Ireland adhering to stones, as the Thames, Humber, Tyne, and Tweed in England; the Liffey, Shannon, and Bresna in Ireland; and the Forth, Tay, and Clyde in Scotland.

#### FAMILY VII.—PERISTOMIDA.

Shell conoid, or subdiscoid, with the margins of the aperture united; aperture protected by an operculum; fluviatile, and the animal having the power of respiring in water.

#### GENUS 34.—PALUDINA.—Lamarck.

Shell ovate, or oblong; spire somewhat turreted; the volutions smooth, rounded, and subcarinated; aperture subrotund, ovate, or oblong, a little angulated above, slightly modified on the inner side by the gibbosity of the body volution; lips united all round, with acute edges; operculum corneus, with concentric lines of growth, and provided with a sublateral nucleus.

1. *PALUDINA VIVIPARA*, pl. XIV, f. 71, 72.—First Ed., pl. 41, f. 71, 72.

*Paludina vivipara*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 173; Brard, Coq. de Paris, p. 174, pl. 7, f. 1; Fleming, Brit. An., p. 315; Alder, Mag. Zool. and Bot., II, p. 116; Thompson, Ann. and Mag. Nat. Hist., p. 17; *Cyclostoma viviparum*, Draparnaud, Hist. Nat. des Moll., p. 34, pl. 1, f. 16, 17; Turton, Man., p. 113, f. 118; Brard, Coq. de Paris, p. 174, pl. 7, f. 1; Rossmassler, f. 66; *Helix vivipara*, Montagu, Test. Brit., p. 386; Brown, Wernerian Mem., II, p. 527; *Viviparus fluviarum*, De Montford, II, p. 247; *Paludina achatina*, Sowerby, Gen., f. 1.

Shell thin, subconic, oblong-ovate; spire consisting of five extremely ventricose, abruptly diminishing volutions, separated by a deep suture, and terminating in an acute apex; aperture suborbicular, a little contracted above; pillar lip slightly reflected, behind which is a subumbilicus; inside smooth, bluish-white, the external bands shining through; whole shell covered with an olive-green shining epidermis, beneath which the shell is white, with three spiral, dark brown bands on the body, and two on the superior volutions, which generally grow fainter as they ascend, until they become nearly invisible before reaching the apex; surface slightly wrinkled longitudinally, several of which are coarser than the others, marking the periodical growth of the shell; aperture protected by a thin horny operculum.

In the young condition the shell is subglobose, subpellucid, with the bands rather obscure, and the volutions appear more flattened above than in the adult state.

Found in the Thames and other slow rivers, and sometimes in ponds. Plentiful in a ditch near Southport, Lancashire. Occurs in a stream at Newtownards, County of Down, Ireland.

2. *PALUDINA ACHATINA*, pl. XIV, f. 68, 69.—First Ed., pl. 41, f. 68, 69.

*Paludina achatina*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 174; Ency. Meth., pl. 458, f. 1, *a, b*; Rossmassler, p. 109, f. 66\*; Turton, Man., p. 133, f. 119; *Lymnea vivipara*, Fleming, Brit. An., p. 315; *Cyclostoma achatina*, Draparnaud, p. 36, pl. 1, f. 18.

Shell thin, oblong-ovate, ventricose; spire consisting of four or five considerably inflated volutions, separated by a well defined, deep suture, and terminating in a rather obtuse apex; aperture suborbicular, slightly contracted above, white within, with the external bands apparent; pillar lip a little reflected on the columella; outer lip thin, and sharp on the edge; whole shell covered with an olivaceous epidermis, beneath which it is provided with three, dark reddish brown, spiral girdles on the

body, and two on the superior volutions; surface with a few obsolete wrinkles, or lines of growth; aperture provided with a thin, elastic, horny operculum.

Found in the canal at Birmingham, where it has hitherto been mistaken for the *P. vivipara*.

This species may be distinguished from the *P. vivipara* by the volutions being less inflated, in the suture being less deep, the spire tapering less abruptly, and more obtuse at the apex; and in the whole shell being more cylindrical.

3. *PALUDINA IMPURA*, pl. XIV, f. 72, 73.—First Ed., pl. 41, f. 72, 73.

*Paludina impura*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 175; Brard, Coq. de Paris, p. 183, pl. 7, f. 2; Drapernaud, Moll., p. 36, pl. 1, f. 19; Turton, Man., p. 134, f. 120; Alder, Mag. Zool. and Bot., II, p. 116; *Paludina tentaculata*, Fleming, Brit. An., p. 315; Thompson, Ann. and Mag. Nat. Hist., VI, p. 17; *Helix tentaculata*, Donovan, Brit. Sh., III, pl. 93; Pennant, Brit. Zool., IV, p. 140, pl. 86, f. 140; Montagu, Test. Brit., p. 389.

Shell oblong-oval, thin, smooth, semitransparent; spire consisting of four or five ventricose volutions, deeply divided by the suture, and terminating in an acute apex; aperture suborbicular, pointed above, and closed by a testaceous, concentrically wrinkled, operculum, which is internally coated with a testaceous covering, and its nucleus subcentral; outer lip smooth on the edge, moderately strong, with a slightly raised internal rib; inner lip a little reflected on the columella; external surface smooth, and of a yellowish horn colour. Length half an inch; diameter three-eighths.

This is a very common shell, inhabiting most slow rivers, streams, and stagnant waters.

Drapernaud, pl. 1, f. 20, figures a variety of this species which is less, shorter, and more conical.

4. *PALUDINA VENTRICOSA*, pl. XIV, f. 74, 75.—First Ed., pl. 41, f. 74, 75.

*Paludina ventricosa*, Leach, MSS.; *Paludina acuta*, Fleming, Brit. An., p. 315; *Paludina similis*, Turton, Man., p. 135, f. 121; Alder, Mag. Zool. and Bot., II, p. 116; *Turbo Leachii*, Sheppard, Linn. Trans., XIV, p. 152; *Cyclostoma simile*, Drapernaud, Hist. des Moll., p. 31, pl. 4, f. 15? *Bithinia ventricosa*, Gray, Med. Rep., 1821, p. 239.

Shell oblong-ovate, conic, smooth, semitransparent, of a yellowish horn colour; body large, tumid; spire abruptly tapering, and consisting of four much inflated volutions, deeply divided by the suture, and terminating in a sharp apex; aperture nearly orbicular, somewhat outwardly produced; outer lip sharp-edged; pillar lip slightly reflected on the columella, with a small, oblique, subumbilicus behind; aperture protected by a testaceous operculum. Length a quarter of an inch; breadth two lines.

In some specimens the body volution is slightly decussated, the spiral striæ being somewhat more obvious than the longitudinal.

Found in ditches at Battersea, near the Thames; and other places in the south of England.

#### GENUS 35.—ASSIMINIA.—Leach.

Shell somewhat oval, light, solid, covered with a horny epidermis; spire produced into an acute pyramid; volutions slightly

angulated in the centre, rounded beneath; aperture elliptical, somewhat modified by the body volution; inner lip plain; columella imperforate; outer lip thin.

It is difficult to distinguish the shells of this genus from those of *Littorina*.

1. *ASSIMINIA GRAYANA*, pl. XVIII, f. 3, 4.

*Assiminia Grayana*, Leach, MSS.; Fleming, Brit. An., p. 275; Berkeley, Zool. Journ., V, p. 429, pl. 19, f. 4; Alder, Mag. Zool. and Bot., II, p. 116; *Nerita syncera hepatica*, Gray, Med. Repos., 1821, p. 239; *Paludina Grayana*, Potiez, Gal., I, p. 251, pl. 25, f. 23, 24; *Lymneus Grayanus*, Jeffreys, Linn. Trans., XVI, p. 378.

Shell ovate, smooth, shining, dark reddish horn-colour, or ferruginous; body large; spire small, consisting of three or four abruptly tapering volutions, slightly divided by a nearly transverse suture, and terminating in a somewhat acute apex; aperture ovate, slightly contracted at both extremities; outer lip thin, even; inner lip smooth, a little reflected on the columella; provided with an ovate, horny, blackish-brown operculum. Length a quarter of an inch; breadth a little more than half its length.

Inhabits the Thames and other rivers, and small streams connected with them, seldom beyond the point where the water is brackish.

#### GENUS 36.—VALVATA.—Müller.

Shell discoid, or conoid, with rounded, close-set, or depressed volutions; covered by an olive-coloured epidermis; aperture circular, not modified by the body; peristome acute, sharp-edged, and continuous; provided with a horny, orbicular operculum, consisting of numerous gradually increasing volutions, having an acute membranous margin, which forms a spiral elevation on the external surface.

1. *VALVATA PISCINALIS*, pl. XIV, f. 62, 63.—First Ed., pl. 41, f. 62, 63.

*Valvata piscinalis*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 172; Alder, Mag. Zool. and Bot., II, p. 116; Kenyon, Mag. Nat. Hist., III, p. 425, f. b, c, d; Fleming, Brit. An., p. 286; Forbes, Mal. Mon., p. 20; Thompson, Ann. and Mag. Nat. Hist., VI, p. 17; *Valvata depressa*, Pfeiffer, Syst., p. 100, pl. 4, f. 33; *Valvata obtusa*, Turton, Man., p. 130, f. 114; Brard, Coq. de Paris, p. 190, pl. 6, f. 17; *Cyclostoma obtusum*, Drapernaud, p. 33, pl. 1, f. 14; *Turbo fontinalis*, Montagu, Test. Brit., p. 348, pl. 22, f. 4; *Lymnea fontinalis*, Fleming, Edin. Ency., VII, p. 78; *Turbo thermalis*, Dillwyn, p. 852.

Shell thin, subpellucid, horn-coloured, smooth, with fine spiral striæ throughout, and a few obscure, concentric lines of growth; length and breadth nearly equal; body very large, much inflated, with a deep central umbilicus at its base; spire small, short, consisting of four tumid, deeply defined volutions; aperture orbicular; peristome thin, the inner lip slightly attached to the body volution. Length little more than a quarter of an inch.

Common in rivers, canals, ponds, and lakes in Britain, and in ditches in the Curraghs, Isle of Man.

Fig. 64, 65, pl. XIV, is a permanent variety, with the spire more produced, and the volutions somewhat scalariform; found at Clonoony, King's County, Ireland.

2. *VALVATA CRISTATA*, pl. XIV, f. 66, 67.—First Ed., pl. 41, f. 66, 67.

*Valvata cristata*, Müller, Verm., p. 198; Fleming, Brit. An., p. 286; Alder, Mag. Zool. and Bot., II, p. 116; Thompson, Ann. and Mag. Nat. Hist., VI, p. 18; *Valvata spirorbis*, Drapernaud, p. 41, pl. 1, f. 32, 33; Turton, Man., p. 131, f. 115; Brard, p. 187, pl. 6, f. 15, 16; *Turbo cristatus*, Maton and Racket, Linn. Tr., VIII, p. 169; *Helix cristata*, Montagu, Test. Brit., p. 460, pl. 1, f. 7, 8.

*Valvata minuta*, of Drapernaud, pl. 1, f. 36, 37, 38, represents the young shell; Turton, Man., p. 132, f. 117.

Shell discoidal, consisting of four cylindrical volutions, flattened above, and umbilicate beneath; exposing nearly all the inner volutions, these are slightly striated transversely; aperture quite orbicular, attached to but not interrupted by the body volution; peristome as thick as the other parts of the shell, and slightly oblique. Diameter one-tenth of an inch.

Found in canals and ditches in Britain, and is a very common species in almost all parts of Ireland.

#### FAMILY VIII.—LYMNÆCEA.

Shell spiral, generally with a smooth external surface; margin of the outer lip always acute, and not reflected. Animals amphibious, usually destitute of an operculum.

#### GENUS 37.—LYMNÆA.—Lamarck.

Shell oblong, thin, sometimes elongated and acutely turreted; spire always produced; aperture large, entire, oblong, generally straitened, and somewhat acuminate above and rounded below; outer lip acute; the lower part of the inner lip ascending on the pillar, forming an oblique plait or fold, and rising, spreads more or less over the columella, or front of the body volution; external surface smooth, frequently polished. Destitute of an operculum.

1. *LYMNÆA STAGNALIS*, pl. XV, f. 19 and 21.—First Ed., pl. 42, f. 19 and 21.

*Lymnæus stagnalis*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 159; Drapernaud, p. 51, pl. 2, f. 38, 39; Pfeiffer, p. 86, pl. 4, f. 19; Turton, Man., p. 121, f. 104; Alder, Mag. Zool. and Bot., p. 114; Brard, p. 133, pl. 5, f. 1; De Montfort, II, p. 268; Sowerby, Genera, f. 1; Rossmassler, I, p. 95, pl. 2, f. 49; Thompson, Ann. and Mag. Nat. Hist., VI, p. 45; *Stagnicola vulgaris*, Leach, Moll., p. 145; *Lymnæus major*, Jeffreys, Linn. Tr., XVI, p. 375; *Limnea stagnalis*, Fleming, Brit. An., p. 273; *Helix stagnalis*, Montagu, Test. Brit., p. 367, pl. 16, f. 8; Donovan, Brit. Sh., II, pl. 51, f. 2; Brown, Wernerian Mem., II, p. 530.

Shell very thin, brittle, oblong-oval, subulate, pellucid, and horn-coloured; body large, longitudinally striated, generally crossed by a few raised spiral ridges; spire acute, consisting of five or six volutions, tapering to a fine point, and separated by a deep suture; aperture oval, a little narrower above than below, and occupying more than half the length of the shell; outer lip thin, but not reflected; pillar lip reflected on the columella, with an oblique fold, behind which is a slight umbilicus.

This shell is subject to some variety. F. 22, 23, pl. XV, is a thin and less ventricose variety, to which Montagu gives the specific name of *fragilis*, p. 369, pl. 16, f. 7.

Fig. 20 is the representation of a young shell.

The very fine specimen from which f. 22 and 23 were drawn, I obtained in a small stream on a flat meadow near Clonooney Barracks, King's County, Ireland, where they were plentiful of that size.

2. *LYMNÆA PALUSTRIS*, pl. XV, f. 17, 18.—First Ed., pl. 42, f. 17, 18.

*Lymnæus palustris*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 160; Drapernaud, p. 52, pl. 2, f. 40 and 42; Pfeiffer, p. 80, pl. 4, f. 20; Turton, Man., p. 123, f. 107; Rossmassler, Icon., I, p. 96, f. 51, 52; Brard, p. 136, pl. 5, f. 6, 7; Alder, Mag. Zool. and Bot., II, p. 114; Thompson, Ann. and Mag. Nat. Hist., VI, p. 45; Forbes, Mal. Mon., p. 14; *Lymnæus communis*, Jeffreys, Linn. Tr., XVI, p. 276; *Stagnicola communis*, Leach, Moll., p. 142; *Limnea palustris*, Fleming, Brit. An., p. 274; *Helix palustris*, Montagu, Test. Brit., p. 373, pl. 16, f. 10; Donovan, Brit. Sh., pl. 175; *Helix stagnalis*, Pennant, Brit. Zool., IV, p. 86, pl. 13, f. 13.

Shell oblong-ovate, subpellucid, brownish horn-coloured; body subcylindrical; spire consisting of four or five well defined, slightly rounded volutions, terminating in a sharp apex, slightly wrinkled longitudinally, and sometimes traversed by distant, slight, irregular transverse ridges, particularly on the body volution, producing a faceted appearance; aperture oval, occupying nearly the half of the shell, inside frequently of a deep chocolate, or purplish-brown; outer lip thin; inner lip a little reflected on the columella, with a small umbilicus behind. Length generally about three-quarters of an inch; breadth three-eighths. It sometimes, however, occurs larger.

This species is subject to great variety, both in proportions and colour. F. 4, 5, 7, 14, 15, 16, and 23, pl. XV, are varieties; f. 26 is a variety of a deep blackish-brown, and is variety *b* of Drapernaud, p. 52, pl. 2, f. 42; f. 11 is variety *c* of the same author, pl. 2, f. 42; f. 6, 7 is a variety, with the apex decollated, which is not uncommon, Maton and Racket, Linn. Tr., VIII, pl. 5, f. 8; Mag. Nat. Hist., VII, p. 161, f. 32.

Found plentifully in ditches, marshes, lakes, and ponds.

3. *LYMNÆA MINUTA*, pl. XV, f. 12, 13.—First Ed., pl. 42, f. 12, 13, and pl. XIV, f. 27.

*Limnæus minutus*, Drapernaud, p. 53, pl. 3, f. 5, 6; Alder, Mag. Zool. and Bot., II, p. 115; Brard, p. 138, pl. 5, f. 8, 9; *Limnæus fossarius*, Turton, Man., p. 124, f. 108; *Limnæus minutus*, Brard, p. 138, pl. 5, f. 8, 9; *Limnæus truncatulus*, Jeffreys, Linn. Tr., XVI, p. 377; Thompson, Ann. and Mag. Nat. Hist., VI, p. 32; *Lymnæa minuta*, Lamarck, VI, pt. 2nd, p. 162; *Lymnæa fossaria*, Fleming, Brit. An., p. 274; *Helix fossaria*, Montagu, Test. Brit., p. 372, pl. 16, f. 9; Brown, Ency. Brit., VI, p. 401; *ib.*, Wernerian Mem., II, p. 530; *Turbo rivulus*, Walker, Test. Min. Rar., f. 57.

Shell oblong-ovate, pellucid, of a yellowish horn colour; spire consisting of five or six rounded, and deeply defined volutions, terminating in a sharp apex; aperture ovate, nearly half the length of the shell; outer lip slightly reflected; inner lip narrowly folded on the columella. Length generally half an inch, but frequently less.

This species is not uncommon in many parts of Britain and Ireland. It frequents muddy drains or ditches, and is often to be found in situations, out of water, existing merely by a little moisture.



4. *LYMNÆA ELONGATA*, pl. XV, f. 1, 2, 3, and 5.—First Ed., pl. 42, f. 1, 2, 3, and 5.

*Lymneus elongatus*, Drapernaud, p. 52, pl. 3, f. 3, 4; Turton, Man., p. 122, f. 106; Alder, Mag. Zool. and Bot., II, p. 115; *Lymnæa leucostoma*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 162; *Lymnæus elongatus*, Rossmassler, Icon., I, p. 101, pl. 2, f. 58; *Limnea elongata*, Sowerby, Genera, f. 6; *Limneus glaber*, Thompson, Ann. and Mag. Nat. Hist., VI, p. 32; *Helix octanfracta*, Montagu, Test. Brit., p. 396 and 588, pl. 11, f. 8; Brown, Ency. Brit., VI, p. 461; *Helix octona*, Pennant, Brit. Zool., IV, p. 138, pl. 8, f. 139; *Helix perigrina*, Dillwyn, Des. Cat., p. 954; *Stagnicola octanfracta*, Leach, Moll., p. 141.

Shell horn-coloured, smooth, pellucid, greatly elongated; body not half the length of the shell; spire long, tapering, consisting of seven or eight slender, gradually diminishing, somewhat cylindrical volutions, terminating in an acute apex, these are very slightly wrinkled longitudinally, and the lower volutions sometimes obscurely striated transversely; aperture oblong, not a third the length of the spire; outer lip thin; inner lip white, and slightly reflected on the columella.

This species is subject to variety, both in size and form, as will be seen by a reference to our figures; in some the spire terminates in a decollated apex. It also varies in the number of its volutions.

*Section II.—Subovate; body ventricose; aperture longer than the spire.*

5. *LYMNÆA AURICULARIA*, pl. XV, f. 29, 30, 31, 32.—First Ed., pl. 42, f. 29, 30, 31, 32.

*Lymnæa auricularia*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 161; *Lymneus auricularis*, Brard, p. 140, pl. 5, f. 2; Turton, Man., p. 117, f. 100; *Limnæus auricularis*, Pfeiffer, p. 85, pl. 4, f. 17, 18; *Limneus auricularis*, Drapernaud, p. 49, pl. 2, f. 28, 29, and 32; Rossmassler, Icon., I, p. 98, pl. 2, f. 55; Jeffreys, Linn. Tr., XVI, p. 372; Alder, Mag. Zool. and Bot., II, p. 115; Thompson, Ann. and Mag. Nat. Hist., VI, p. 29; *Helix auricularia*, Linnæus, Syst. Nat., p. 1250; Pennant, Brit. Zool., IV, p. 138; Donovan, Brit. Sh., pl. 51, f. 1; Montagu, Test. Brit., p. 375, pl. 16, f. 2, and p. 381, pl. 16, f. 1; *Helix limosa*, Fleming, Brit. An., p. 275; Brown, Wernerian Mem., II, p. 531; Ib., Ency. Brit., VI, p. 461; *Radix auriculatus*, De Montfort, II, p. 207; *Gulnaria auricularia*, Leach, Moll., p. 148; *Buccinum auricula*, Müller, Verm., II, p. 126.

Shell slightly ovate, thin, brittle, subpellucid, of a pale yellowish horn colour; body very large, ventricose, and slightly wrinkled longitudinally; spire very short, consisting of three or four well defined volutions, terminating in an acute apex; aperture oblong-ovate, extremely wide, and large; outer lip greatly extended, and somewhat reflected at the margin; pillar lip smooth, broadly reflected on the columella, with a strong fold towards its lower part, and forming a slight umbilicus behind.

Found in the river Avon, the Kennet, Berkshire; and in a ditch at Clonooney, King's County, Ireland.

6. *LYMNÆA PEREGRINA*, pl. XV, f. 8, 9, 10, 11, 36, 37, 38, 39, 40.—First Ed., pl. 42, f. 8, 9, 10, 11, 36, 37, 38, 39, 40.

*Limnæa peregrina*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 161; *Limnæus peregrinus*, Pfeiffer, p. 90, pl. 4, f. 23, 24; *Limneus peregrinus*, Drapernaud, p. 50, pl. 2, f. 34 and 37; Turton, Man., p. 118, f. 101; Jeffreys, Linn. Tr., XVI, p. 374; Alder,

Mag. Zool. and Bot., II, p. 115; Thompson, Ann. and Mag. Nat. Hist., VI, p. 30; *Lymnæa putris*, Fleming, Edin. Ency., VII, p. 77; *Lymnæa limosa*, Fleming, Brit. An., p. 274; *Helix peregrina*, Gmelin, Linn. Syst. Nat., p. 3659; Montagu, Test. Brit., p. 373, pl. 16, f. 3; *Helix putris*, Pennant, Brit. Zool., pl. 86, f. 137; Brown, Wernerian Mem., II, p. 530; Ib., Ency. Brit., VI, p. 461; *Helix limosa*, Brown, Wernerian Mem., II, p. 530; *Buccinum peregrinum*, Müller, Verm., II, p. 134; *Gulnaria peregrina*, Leach, Moll., p. 146.

*Variety 1. Ovate, aperture more dilated*, pl. XV, f. 8, 9, 10, 11.—*Limnæa ovata*, First Ed. pl. 42, f. 8, 9, 10, 11.

*Lymnæa ovata*, Lamarck, VI, II, p. 121; Kenyon, Mag. Nat. Hist., II, p. 425, f. g; *Lymnæus ovatus*, Pfeiffer, p. 89, pl. 4, f. 21; *Limneus ovatus*, Drapernaud, p. 50, pl. 2, f. 30, 31; *Lymneus ovatus*, Brard, p. 142, pl. 5, f. 4, 5; *Lymnæus ovatus*, Rossmassler, Icon., I, p. 100, pl. 2, f. 56; *Limnea lineata*, Bean, Mag. Nat. Hist., VII, p. 493, f. 62.

*Variety 2. Outer lip expanded, and with an internal rib*, pl. XV, f. 37.

*Helix auricularia*, var., Maton and Racket, Linn. Tr., VIII, p. 218, pl. 5, f. 8\*; *Limnea marginata*, Michaud, Compl., p. 88, pl. 16, f. 15, 16.

*Variety 3. Shell small, stronger; spire but slightly produced; the outer lip not attenuated*, pl. XV, f. 50, 51, and pl. XVIII, f. 17, 18.—First Ed., pl. 46, f. 50, 51.

*Helix lutea*, Montagu, Test. Brit., p. 380, pl. 16, f. 6; Maton and Racket, Linn. Tr., VIII, p. 222.

*Variety 4. Spire acute, and tapering.*

*Lymneus acutus*, Jeffreys, Linn. Tr., XVI, p. 373.

*Variety 5. With the volutions reversed.*

*Limnea lineata*, Bean, l. c.; Sturm, pl. 39.

Shell ovate, thin, subpellucid, yellowish horn-coloured, slightly wrinkled longitudinally; body very tumid, and large; spire very short, consisting of three or four rapidly decreasing volutions, terminating in a sharp apex; aperture very large, oval, about three-fourths the length of the shell; outer lip thin; inner lip broadly reflected on the columella.

This species is subject to considerable variety, both in form and size; and is plentifully diffused in almost all ditches, ponds, and lakes.

We found variety 2, of the large size, figured in pl. XV, f. 10, 11, in ditches at Bury, Lancashire.

7. *LYMNÆA INVOLUTA*, pl. XVIII, f. 5.

*Limneus involutus*, Harvey; Alder, Mag. Zool. and Bot., II, p. 115; Thompson, Ann. and Mag. Nat. Hist., VI, p. 31.

Shell very thin, pellucid, shining, rendering the columella visible throughout its whole length; colour, pale amber; body very large, enveloping the spire, and provided with coarse, longitudinal striæ; spire very short, sunk, truncated at the apex, and sometimes concave, consisting of three volutions, none of which are visible in the profile of the shell; aperture very large, wide at the base, and extending to the apex; margin reflected only where it joins the pillar. Length five lines and a half; breadth three lines and a half.

Its general aspect is not unlike *Akera flexilis*, in consequence of the aperture extending to the apex, and the appearance of the columella.

This interesting and new species was discovered by William Henry Harvey, Esq., of Limerick, in a small alpine lake on the

mountain of Cromaglaun, near the lakes of Killarney, Ireland. In his cabinet, and those of William Thompson, Esq., Mr. Hyndman, and Dr. Drummond of Belfast, and Robert Ball, Esq., Dublin.

GENUS 38.—AMPHIPEPLEA.—Nilson.

Shell subovate, nearly globular, very thin, membranaceous, and flexible; body extremely large; spire very small, and subacute; outer lip not continuous, slightly inflated above, and acute at the base; pillar lip provided with a single plait, or twist, and a little reflected on the base of the columella.

1. AMPHIPEPLEA GLUTINOSA, pl. XV, f. 27, 28.—First Ed., pl. 42, f. 27, 28.

*Amphipectea glutinosa*, Nilson, Moll. Sacc., p. 58; Rossmassler, Icon., I, p. 93, pl. 2, f. 48; *Limneus glutinosus*, Draparnaud, p. 50; Turton, Man., p. 120, f. 103; Michaud, pl. 10, f. 13, 14; Alder, Mag. Zool. and Bot., p. 115; Fleming, Brit. An., p. 275; *Limneus glutinosus*, Jeffreys, Linn. Tr., XVI, p. 371; *Limnea glutinosa*, Sowerby, Genera, f. 5; *Lymnæa glutinosa*, First Ed., pl. 42, f. 27, 28; *Helix glutinosa*, Montagu, Test. Brit., p. 379, pl. 16, f. 5; Fleming, Edin. Ency., VII, p. 81; Brown, Ency. Brit., VI, p. 461; *Myxas Mulleri*, Leach, Moll., p. 149; *Buccinum glutinosum*, Müller, Verm., II, p. 129.

Shell suborbicular, very thin, diaphanous, shining, smooth, or obsoletely wrinkled longitudinally, and of a pale yellowish horn colour; body extremely large, much inflated; spire very small, consisting of three volutions, hardly rising above the body, well defined by the suture, and terminating obtusely; aperture oval, very large, extending nearly the whole length of the body; outer lip excessively thin; destitute of an umbilicus on the pillar.

Found in ditches in England, Ireland, and Scotland.

2. AMPHIPEPLEA LACUSTRIS, pl. XV, f. 24, 25.—First Ed., pl. 42, f. 24, 25.

*Gulnaria lacustris*, Leach, Moll., p. 146?

Shell subovate, extremely thin, pellucid, and shining, of a pale yellowish horn colour; body very large, and inflated; spire excessively short, consisting of two small volutions, which hardly rise above the body, superior one blunt at the apex; aperture suboval, a little narrowed above; outer lip thin, expansive, with its base rounded; inner lip a little reflected on the columella, with a slight subumbilicus behind it.

I found this species in Loch Leven, Kinrossshire, Scotland.

It differs from the preceding species, in being larger and thicker, the spire having but two volutions, in the aperture being not so large and expanded, and in the base of the lip being more rounded.

In Lady Jardine's cabinet.

GENUS 39.—PHYSA.—Draparnaud.

Shell sinistral, or with the volutions turning in a contrary direction to the ordinary course, oval, or oblong, very thin, and polished; spire usually prominent; aperture longitudinal, ovate, or oblong, contracted above; outer lip very thin, and acute, partly obtruding above the plane of the aperture; inner lip reflected on the columella.

1. PHYSA FONTINALIS, pl. XIV, f. 54, 55.—First Ed., pl. 41, f. 54, 55.

*Physa fontinalis*, Draparnaud, p. 54, pl. 3, f. 8, 9; Lamarck, An. San. Vert., VI, pt. 2nd, p. 156; Pfeiffer, p. 94, pl. 4, f. 28; Brard, p. 167, pl. 7, f. 7, 8; Fleming, Brit. An., p. 276; Leach, Moll., p. 150; Turton, Man., p. 127, f. 110; Jeffreys, Linn. Tr., XVI, p. 379; Alder, Mag. Zool. and Bot., II, p. 114; Forbes, Mal. Mon., p. 14; Thompson, Ann. and Mag. Nat. Hist., VI, p. 48; *Bulla fontinalis*, Montagu, Test. Brit., p. 226; Brown, Wernerian Mem., II, p. 516; Ib., Ency. Brit., VI, p. 433; Fleming, Edin. Ency., VII, p. 85; *Limnea fontinalis*, Sowerby, Genera, f. 8; *Planorbis bulla*, Müller, Verm., II, p. 167.

Variety 1, pl. XIV, f. 56, 57. *Shell somewhat more inflated, and of a very pale horn colour, approaching to white.*

*Physa alba*, Turton, Zool. Journ., II, p. 363, pl. 13, f. 3; Ib., Man., p. 128, f. 111.

Found in the river Towin, North Wales.

Variety 2, pl. XIV, f. 83, 84. *Volutions more oblique; body less inflated; base more acute; and spire more obtuse.*

*Helix Bullæoides*, Donovan, Brit. Sh., pl. 168, f. 2; *Bulla fluviatilis*, Turton, Conch. Dict., p. 27, the young shell.

It is plentiful in a stream at Clonooney, King's County, Ireland.

Shell sinistral, oblong-oval, extremely thin, transparent, fragile, and glossy, and of a greenish horn colour; body very large; spire very short, consisting of three or four volutions, the lower one a little inflated, and terminating in a somewhat obtuse apex; aperture oblong, occupying about three-fourths the length of the shell, contracted, and pointed above, and rounded at the base. Length about three-eighths of an inch; breadth not quite a quarter.

Old shells are not unfrequently provided with a few longitudinal and transverse wrinkles.

This species is pretty generally diffused throughout Great Britain and Ireland, in rivers, streams, and stagnant pools, adhering to the under surface of aquatic plants.

2. PHYSA ACUTA, pl. XIV, f. 58, 59.—First Ed., pl. 41, f. 58, 59.

*Physa acuta*, J. Sowerby, MSS.; *Bulla fontinalis*, Maton and Rackett, Linn. Tr., VIII, pl. 4, f. 1.

Shell oblong-ovate, very thin, brittle, and transparent; body very large; spire very short, consisting of four volutions, and terminating in an acute apex; aperture oblong-ovate, somewhat oblique, and lengthened beyond the body volution. Length nearly half an inch; breadth a quarter.

Found in Anglesea, Wales, and first identified as British by J. Sowerby, Esq., who bred it in a water-butt, and describes the animal as differing materially from *P. fontinalis*.

3. PHYSA HYPNORUM, pl. XIV, f. 60, 61.—First Ed., pl. 41, f. 60, 61.

*Physa hypnorum*, Draparnaud, p. 55, pl. 3, f. 12, 13; Lamarck, An. San. Vert., VI, pt. 2nd, p. 157; Pfeiffer, p. 97, pl. 4, f. 29; Alder, Mag. Zool. and Bot., II, p. 114; Turton, Man., p. 129, f. 113; Thompson, Ann. and Mag. Nat. Hist., VI, p. 34; Jeffreys, Linn. Tr., XVII, p. 381; *Bulla hypnorum*, Montagu, Test. Brit., p. 228; Brown, Wernerian Mem., II, p. 517; Ib., Ency. Brit., VI, p. 433; Maton and Rackett, Linn. Tr., VIII, p. 127, pl. 4, f. 3; Fleming, Edin. Ency., VII,

p. 85; *Amplexa hypnorum*, Fleming, Brit. An., p. 276; *Limnea turrita*, Sowerby, Genera, f. 10; *Nauta hypnorum*, Leach, Moll., p. 152; *Planorbis turritus*, Müller, Verm., II, p. 169.

Shell sinistral, elongated, subcylindrical, very smooth, glossy, and transparent, of a dark greenish horn colour; body about half the length of the shell; spire consisting of four or five well divided, and taper volutions, terminating in an acute apex; aperture ovate, narrow, contracted above, and rounded beneath; pillar somewhat sinuated.

Found in ditches, stagnant pools, and lakes in many places of Great Britain and Ireland.

#### GENUS 40.—PLANORBIS.—Müller.

Shell discoidal, umbilicate; spire depressed; apex always distinct; volutions heterostrophe, or revolving from right to left, convolving always on the same plane, and apparent on both sides; aperture oblong, lunate, or subquadrate, its breadth being nearly equal to its length, and sometimes greater; outer lip thickened, expanded, and its under part always extended forwards; umbilicus very wide; destitute of an operculum.

*Section I.—Volutions devoid of a carina, rounded on both sides; spire slightly concave.*

1. PLANORBIS CORNEUS, pl. XIV, f. 31, 32, 33.—First Ed., pl. 41, f. 31, 32, 33.

*Planorbis corneus*, Draparnaud, p. 43, pl. 1, f. 42, 43, 44; Pfeiffer, p. 77, pl. 4, f. 3, 4; Lamarck, An. San. Vert., VI, pt. 2nd, p. 152; Brard, p. 147, pl. 6, f. 1, 2; Jeffreys, Linn. Tr., XVI, p. 383; Fleming, Brit. An., p. 277; Ib., Edin. Ency., VII, p. 69; Alder, Mag. Zool. and Bot., II, p. 112; Thompson, Ann. and Mag. Nat. Hist., VI, p. 34; Sowerby, Genera, f. 1; Turton, Man., p. 112, f. 95; Rossmassler, Icon., II, p. 14, pl. 7, f. 113; *Planorbis purpureus*, Müller, Verm., II, p. 154; *Planorbis similis*, p. 166, young shell; *Helix cornea*, Donovan, Brit. Sh., II, pl. 39, f. 1; Montagu, Test. Brit., p. 448; Brown, Wernerian Mem., p. 524; Ib., Ency. Brit., VI, p. 458; *Helix nana*, Pennant, Brit. Zool., IV, p. 133, pl. 83, f. 125, the young shell; p. 134, f. 126, the adult.

Shell dextral, depressed; spire consisting of four rapidly diminishing volutions, deeply divided by the suture, sunk below the level of the outer, or body volution, and coiled upon its apex, which gradually sinks, and forms a concavity, or umbilicus; under surface nearly flat, and exposing the whole volutions of the spire; entire body rounded on the sides; the shell transversely striated, and sometimes with some wrinkles, across the volutions; aperture nearly equilateral, sublunated, and oblique; outer lip thin; inner lip reflected on the columella, forming a continuous line with the peristome; colour, rufous or chestnut above, pale yellowish-brown or bluish-grey beneath. Diameter generally an inch, but often to be met with an inch and a quarter.

In the young condition, the volutions are provided with fine spiral striæ.

Found in slow rivers and stagnant ditches in England and Ireland.

2. PLANORBIS ALBUS, pl. XIV, f. 52, 53.—First Ed., pl. 41, f. 52, 53.

*Planorbis albus*, Müller, Verm., II, p. 164; Pfeiffer, p. 80,

pl. 4, f. 9, 10; Leach, Moll., p. 156; Jeffreys, Linn. Tr., XVI, p. 387; Fleming, Edin. Ency., VII, p. 69; Ib., Brit. An., p. 278; Turton, Man., p. 114, f. 97; Alder, Mag. Zool. and Bot., II, p. 113; Forbes, Mal. Mon., p. 13; Thompson, Ann. and Mag. Nat. Hist., VI, p. 48; *Planorbis hispidus*, Draparnaud, p. 43, pl. 1, f. 45, 46, 47, 48; Lamarck, An. San. Vert., VI, pt. 2nd, p. 154; Brard, p. 159, pl. 6, f. 6, 7; *Helix alba*, Montagu, Test. Brit., p. 459, pl. 25, f. 7; Brown, Wernerian Mem., II, p. 524; Ib., Ency. Brit., VI, p. 458.

*Variety 1. Shell smooth, shining, and white.*

*Planorbis glaber*, Jeffreys, Linn. Tr., XVI, p. 387.

Shell dextral, thin, pale yellowish-white, subpellucid, depressed; body volution very large, rounded on the sides; spire consisting of four rapidly decreasing volutions, which are equally convex both above and below; the apex of the spire somewhat sunk, forming a subumbilicus, and the under surface more concave; whole external surface covered with fine, elevated, close-set, transverse, and spiral striæ, producing a reticulated appearance, which are provided with deciduous bristles; aperture very large, sublunate, somewhat higher than wide, clasping the body volution; outer lip thin, a little oblique; pillar lip white internally, spread on the columella, and continuous with the margin of the outer lip. When recent it is covered with a fine pilous epidermis.

Found principally in stagnant waters, ponds, and ditches, and by no means a plentiful species.

3. PLANORBIS LÆVIS, pl. XVIII, f. 7, 8, 9.

*Planorbis lævis*, Alder, Catalogue, Sup. Trans. Newcastle Nat. Hist. Soc., II, p. 337; Ib., Mag. Zool. and Bot., II, p. 113.

Shell smooth, semitransparent; volutions equally convex both above and below; body volution rounded on the sides, large; spire consisting of two or three small, compact, rounded volutions; whole shell with nearly obsolete lines of growth, and of a brownish horn colour; aperture sublunated, or nearly circular.

Discovered by Joshua Alder, Esq., Newcastle, in a pond on Holy Island, and has also been met with by him and the Rev. W. Mark, at Whitby, Northumberland; and has been found at Belfast by William Thompson, Esq.

4. PLANORBIS IMBRICATUS, pl. XIV, f. 46, 47, and pl. XVIII, f. 11.—First Ed., pl. 41, f. 46, 47.

*Planorbis imbricatus*, Müller, Verm., II, p. 165; Draparnaud, p. 44, pl. 1, f. 49, 50, 51; Pfeiffer, p. 84, pl. 3, f. 15; Brard, p. 163, pl. 6, f. 10, 11; Jeffreys, Linn. Tr., XVI, p. 388; Alder, Mag. Zool. and Bot., II, p. 114; Turton, Man., p. 11, f. 95; Forbes, Mal. Mon., p. 13; Thompson, Ann. and Mag. Nat. Hist., VI, p. 49; *Planorbis nautilus*, Fleming, Edin. Ency., VII, p. 69; Ib., Brit. An., p. 278; *Turbo nautilus*, Brown, Ency. Brit., VI, p. 457; Ib., Wernerian Mem., II, p. 522; *Helix nautilus*, Walker, f. 20, 21; Montagu, Test. Brit., p. 464, pl. 25, f. 5.

*Variety 1, pl. XVIII, f. 10. Shell considerably smaller, with the imbricated laminæ more distant.*

*Planorbis cristatus*, Draparnaud, p. 44, pl. 2, f. 1, 2, 3; Pfeiffer, p. 84; Alder, Mag. Zool. and Bot., p. 114.

*Variety 2. With the laminæ quite obsolete.*

Shell considerably depressed, pellucid, of a greenish or blackish horn colour; sides of the body rounded; spire consisting of



two or three volutions, well divided by the suture line; somewhat largely umbilicate above and below; body volution provided with transverse spinous ribs, forming a regular crest round the centre of the sides; aperture slightly ovate; outer lip continuous all round. Diameter the tenth of an inch.

Not unfrequent in ponds and ditches, adhering to aquatic plants.

*Section II.—Volutions carinated.*

5. *PLANORBIS CARINATUS*, pl. XIV, f. 35, 36, 37.—First Ed., pl. 41, f. 35, 36, 37.

*Planorbis carinatus*, Müller, Verm., II, p. 157; Drapernaud, p. 46, pl. 21, f. 13, 14, and 16; Pfeiffer, p. 76, pl. 4, f. 5, 6; Brard, p. 150, pl. 6, f. 3; Turton, Man., p. 106, f. 87; Alder, Mag. Zool. and Bot., II, p. 113; Thompson, Ann. and Mag. Nat. Hist., VI, p. 35; *Helix complanata*, Montagu, Test. Brit., Sup., p. 146, pl. 25, f. 4; *Helix planata*, Maton and Rackett, Linn. Tr., VIII, p. 189, pl. 5, f. 14; *Helix planorbis*, Linné, Syst. Nat., I, p. 1242.

*Variety 1. Planorbis disciformis*, Jeffreys, Linn. Tr., XVI, p. 521; Alder, Mag. Zool. and Bot., II, p. 113; *Planorbis lutescens*, Jeffreys, Linn. Tr., XVI, p. 385; *Planorbis planatus*, Turton, Man., p. 110, f. 92; *Helix carinata*, Montagu, Test. Brit., p. 451, pl. 25, f. 1.

Shell pale horn-coloured, subpellucid; with six rapidly increasing volutions, with a prominent obtuse keel on their outer edges, almost flat above, somewhat convex, and gradually bevilling off towards the outer edge beneath, the outer volution suddenly increasing in size, and the hinder parts of each volution rather convex; aperture obliquely angular, contracted to a point beneath; provided with a slight central umbilicus. Diameter about half an inch.

This shell may be distinguished from the *Planorbis marginatus* by the under side of the volutions being less inflated, and by their gradually bevilling off to the outer edge. In old shells the volutions become more inflated. This species is frequently covered with a thick brownish coating. It is also liable to monstrosities. Sheppard, in the Linnean Transactions, vol. XIV., page 157, describes one with the volutions apart, similar to the *Scalaria preciosa*.

Found in stagnant waters in many parts of Great Britain and Ireland.

6. *PLANORBIS MARGINATUS*, pl. XIV, f. 49, 40, 41.—First Ed., pl. 41, f. 39, 40, 41.

*Planorbis marginatus*, Drapernaud, p. 45, pl. 2, f. 11, 12, and 15; Brard, p. 152, pl. 6, f. 5; Rossmassler, Icon., II, pl. 2, f. 59; Alder, Mag. Zool. and Bot., II, p. 112; Turton, Man., p. 107, f. 87; *Planorbis complanatus*, Turton, Man., p. 108, f. 88; Fleming, Brit. An., p. 278; *Helix planorbis*, Pennant, Brit. Zool., II, pl. 83, f. 123; Maton and Rackett, Linn. Tr., VIII, p. 188, pl. 5, f. 13; *Helix complanata*, Montagu, Test. Brit., p. 450, pl. 25, f. 4; *Planorbis umbilicatus*, Müller, Verm., II, p. 160; Jeffreys, Linn. Tr., XVI, p. 384.

It is subject to the following varieties.

*Variety 1. Sides unequal, fragile, and glossy.*

*Planorbis turgidus*, Jeffreys, Linn. Tr., XVI, p. 383.

*Variety 2. Planorbis rhombeus*, Turton, Man., p. 108, f. 90; *Planorbis Sheppardi*, Leach, Moll., p. 149; *Planorbis*

*Drapernaldi*, Jeffreys, Linn. Tr., XVI, p. 306; *Helix Drapernaldi*, Sheppard, Linn. Trans., XIV, p. 158.

*Variety 3. Destitute of a keel.*

Shell of a brownish horn-colour, semitransparent, slightly striated transversely, flat, or somewhat concave above, subumbilicated below; with five or six rapidly increasing, flat volutions, with a strong carina above, and ventricose and rounded to the margins beneath; aperture rhombic, with the front rounded. Three-quarters of an inch in diameter.

Found in stagnant waters.

This is to be distinguished from *P. carinatus* by its being thicker, and the volutions more rounded, and more convex beneath on the margins; in its more rounded aperture; and in the keel being less prominent.

The young shell is more rhomboidal, with the edges considerably thicker in proportion to its size, and is described and figured by Turton as a distinct species, under the name of *Planorbis rhombeus*.

A remarkable monstrosity of this species was found by Mr. Thomas Stephens, in the pond of the College Botanic Garden of Dublin; and is in the cabinet of my respected friend M. J. O'Kelly, Esq., of Rochestown House, near Cabinteely, Ireland. Plate XIV, f. 38.

I figured and described this monstrosity in the Wernerian Memoirs, vol. II, p. 528, pl. 24, f. 10, under the name of *Helix cochlea*. It is thus described:—

“Shell of a dark horn-colour, with seven tapering, rounded volutions; the three next the apex are twisted like a corkscrew, and terminate in a sharp point; the five lower volutions slope gradually to a carinated ridge, which commences in the centre of the outer margin of the lip, and loses itself in the fifth volution, giving the volutions the appearance of being flat at bottom; volutions slightly wrinkled obliquely across; aperture somewhat angulated, oval, and a little compressed; lip very thin, and reflected on the columella at the base, where it is provided with a deep and wide umbilicus.”

Turton described and copied my shell, in his Conch. Dict., under the name of *Helix terebra*; and in his Manuel, published in 1831, followed me, in the first edition of this work, in connecting it with *Planorbis marginatus*.

7. *PLANORBIS VORTEX*, pl. XIV, f. 44, 45.—First Ed., pl. 41, f. 42, 43.

*Planorbis vortex*, Müller, Verm., II, p. 158, var. a; Drapernaud, p. 44, pl. 2, f. 4, 5; Brard, p. 154, pl. 6, f. 9; Lamarck, An. San. Vert., VI, p. 154; Pfeiffer, p. 79, pl. 4, f. 7; Rossmassler, p. 104, pl. 2, f. 61; Jeffreys, Linn. Tr., XVI, p. 382; Turton, Man., p. 109, f. 91; Alder, Mag. Zool. and Bot., II, p. 113; Forbes, Mal. Mon., p. 13; Thompson, Ann. and Mag. Nat. Hist., VI, p. 50; *Planorbis compressus*, Michaud, Compl., p. 81, pl. 16, f. 6 and 8; *Helix vortex*, Linné, Syst. Nat., I, p. 1242; Montagu, Test. Brit., p. 454, pl. 25, f. 3; Brown, Wernerian Mem., II, p. 524; Ib., Ency. Brit., 6th Ed., VI, p. 458; Donovan, Brit. Sh., pl. 39, f. 1; Fleming, Brit. An., p. 278.

*Monstrosity. The aperture provided with a thickened internal rib*, Michaud, Compl., p. 80, pl. 16, f. 3, 4, 5; Rossmassler, Icon., I, p. 105, f. 62.

Shell brownish horn-colour, transparent, very thin, flattened above, and a little concave below; with six or seven gradually increasing, obliquely and transversely striated volutions, convex

before and flattened behind, and furnished with a sharp carina; aperture subtriangular, rhomboidal, white and thickened internally, and slightly compressed. Diameter about three-eighths of an inch.

Found in ditches and other stagnant waters in Great Britain and Ireland.

8. *PLANORBIS SPIRORBIS*, pl. XIV, f. 42, 43.—First Ed., pl. 41, f. 44, 45.

*Planorbis spirorbis*, Müller, Verm., II, p. 161; Brard, p. 156; Sturm, Fauna, pl. 45; Turton, Man., p. 115, f. 98; Alder, Mag. Zool. and Bot., II, p. 113; Forbes, Mal. Mon., p. 13; Thompson, Ann. and Mag. Nat. Hist., VI, p. 50; *Planorbis vortex*, Drapernaud, Moll., p. 45, pl. 2, f. 6, 7; Jeffreys, Linn. Tr., XVI, p. 382; Pfeiffer, p. 79, pl. 4, f. 8; *Helix spirorbis*, Montagu, Test. Brit., Sup., p. 455, pl. 25, f. 2; Maton and Rackett, Linn. Tr., VIII, p. 191; Brown, Wernerian Mem., II, p. 524; Ib., Ency. Brit., 6th Ed., VI, p. 458; Turton, Brit. Fauna, p. 187.

Shell thin, semitransparent, brownish horn-colour, slightly and equally concave both above and below; with six gradually increasing, rounded, nearly equal volutions, placed quite lateral upon each other, the exterior one nearly round, provided with a flattened carina; the whole shell covered with very fine transversely oblique striæ; aperture subrotund, and rounded below. Diameter about a quarter of an inch.

Found in ditches and stagnant waters.

This species seldom exceeds a quarter of an inch in diameter, and may be distinguished from the *P. vortex* by its being equally concave above and below, and in the keel on the margin of the outer volution being much less prominent, and, indeed, in some specimens it is nearly obsolete; when it is so, the aperture is not at all angulated. It is, besides, not so thin and depressed as the *vortex*, in proportion to its size.

*Section III.—Shell shining, translucent; spire deeply umbilicate; volutions provided with a slight carina.*

9. *PLANORBIS NITIDUS*, pl. XIV, f. 48, 49.—First Ed., pl. 41, f. 48, 49.

*Planorbis nitidus*, Müller, Verm., II, p. 263; Pfeiffer, p. 82, pl. 4, f. 12, 13; Fleming, Brit. An., p. 278; Jeffreys, Linn. Tr., XVI, p. 389; Alder, Mag. Zool. and Bot., II, p. 114; Thompson, Ann. and Mag. Nat. Hist., VI, p. 51; *Planorbis lenticularis*, Sturm, Fauna, VI, pl. 8, f. 16; *Planorbis fontanus*, Turton, Man., p. 110, f. 93; *Planorbis complanatus*, Drapernaud, Moll., p. 47, pl. 2, f. 20, 21, 22; Rossmassler, Icon., II, p. 16, pl. 7, f. 116; Brard, p. 161, pl. 6, f. 4; *Helix fontana*, Lightfoot, Phil. Trans., LXXVI, pl. 2, f. 1; Montagu, Test. Brit., p. 462, pl. 6, f. 6; Maton and Rackett, Linn. Tr., VIII, p. 192; Brown, Wernerian Mem., II, p. 524; *Helix lenticularis*, V. Alten., p. 35, pl. 2, f. 4.

Shell pellucid, glossy, nearly destitute of wrinkles, reddish or greyish horn-coloured; lenticular, greatly flattened, almost equally convex on both sides, and a little depressed in the centre; with four volutions, the outer one subcarinate near the middle, produced by the gradual outward slope of the shell, both above and below; a small central umbilicus on the under side; the internal angles of the ribs clasp the body nearly equally on both sides, embracing nearly half the diameter of the first volution; margin very thin, and considerably oblique;

aperture contracted, and almost brought to an angle externally. Diameter not a quarter of an inch.

Inhabits stagnant waters, usually adhering to aquatic plants.

This shell may be easily confounded with the *Segmentina lineata*, but is more compressed, and not so convex above, and is destitute of the lines which mark the segments of that shell.

*Section IV.—Destitute of a carina; volutions rounded both before and behind, and deeply umbilicated.*

10. *PLANORBIS CONTRORTUS*, pl. XIV, f. 33, 34.—First Ed., pl. 41, f. 33, 34.

*Planorbis contrortus*, Müller, Verm., II, p. 162; Drapernaud, Moll., p. 42, pl. 1, f. 39, 40, 41; Sturm, Fauna, pl. 3, f. 4; Pfeiffer, p. 81, pl. 4, f. 11; Lamarck, An. San. Vert., VI, pt. 2nd, p. 154; Jeffreys, Linn. Tr., XVI, p. 383; Fleming, Brit. An., p. 277; Forbes, Mal. Mon., p. 13; Rossmassler, Icon., II, p. 16, pl. 7, f. 117; Turton, Man., p. 113, f. 96; Brard, p. 157, pl. 6, f. 12, 13, 14; Alder, Mag. Zool. and Bot., II, p. 114; Thompson, Ann. and Mag. Nat. Hist., VI, p. 51; *Helix contorta*, Linnè, Syst. Nat., I, p. 1244; Montagu, Test. Brit., p. 457, pl. 25, f. 6; Donovan, Brit. Sh., III, pl. 99; Brown, Ency. Brit., 6th Ed., VI, p. 458; Ib., Wernerian Mem., II, p. 524; *Helix umbilicata*, Pulteney, Cat. Dorset, p. 47, pl. 20, f. 11; *Helix crasius*, Da Costa, Brit. Sh., p. 66, pl. 4, f. 11.

Shell thick, depressed, of a brown horn-colour, sometimes rufous or chestnut; with five or six greatly compressed, equal sized, compact, close-set volutions, the outer one rounded, the others on the wider side rise nearly to an edge, and are divided by a deep suture, having a subumbilicus in the centre; upper side largely and deeply umbilicated, exhibiting every volution, spirally descending to the bottom; aperture crescent-shaped, compressed, and clasping the body volution. Diameter a quarter of an inch; and somewhat more than a tenth of an inch in thickness.

Common in ditches and stagnant pools.

#### GENUS 41.—SEGMENTINA.—Fleming.

Shell divided internally by transverse septa into several chambers, which communicate into each other by triradiated apertures.

1. *SEGMENTINA LINEATA*, pl. XIV, f. 50, 51.—First Ed., pl. 41, f. 50, 51.

*Segmentina lineata*, Fleming, Brit. An., p. 279; Ib., Ency. Brit., pl. 367, f. 8; *Planorbis nitidus*, Müller, II, p. 163; Drapernaud, Moll., p. 46, pl. 2, f. 17, 18, 19; Rossmassler, Icon., II, p. 15, pl. 7, f. 114, 115; Turton, Man., p. 116, f. 91; *Planorbis nautilus*, Fleming, Edin. Ency., VII, p. 69; Kickx, Moll. Barb., p. 66; *Planorbis lineatus*, Alder, Mag. Zool. and Bot., II, p. 114; *Nautilus lacustris*, Lightfoot, Phil. Trans., XXVI, pl. 1, figs. 1 to 7; Montagu, Test. Brit., p. 191, pl. 6, f. 3; *Hemithalamus lacustris*, Leach, Moll., p. 137; *Helix lineata*, Walker, Test. Min. Rar., pl. 1, f. 28.

Shell compressed, subcarinated, extremely pellucid, smooth and shining, horn-coloured, sometimes reddish-brown; upper surface convex; apex depressed, concave, and deeply umbilicate; with four volutions, the apical one lost in the depression, the outer one very large, these are bordered on their outer edge with a whitish spiral band, which terminates in the centre

at the junction of the volutions; outer volution exhibiting three white curved, remote, equidistant lines, radiating from the umbilicus; these are the internal septa which divide the chambers; under side nearly flat, and umbilicated; aperture oval, and somewhat triangular; outer lip interrupted. Diameter not a quarter of an inch.

Found in stagnant water, adhering to aquatic plants.

This shell may be easily confounded with the *Planorbis nitidus*, but if inspected through a lens the concamerations will be at once perceived.

#### FAMILY IX.—COLIMACEA.

Spiral; destitute of any exterior projections, except the additions of growth; outer lip frequently reflected; terrestrial or amphibious; tentacles of the animal cylindrical, with or without an operculum.

##### Section I.—Animals with two tentacles.

#### GENUS 42.—CYCLOSTOMA.—Lamarck.

Shell turbinated, variable in shape, thin; the apex in most species obtuse, and the volutions ventricose; aperture entire, circular, or nearly so in the adult state; outer lip more or less angular at the upper part, sometimes thickened, usually reflected and united all round, and frequently externally fringed; operculum spiral, horny, but inclining to testaceous in some species, consisting of a few depressed convolutions, provided with a simple testaceous internal coating.

1. *CYCLOSTOMA ELEGANS*, pl. XIV, f. 28.—First Ed., pl. 41, f. 28.

*Cyclostoma elegans*, Draparnaud, p. 32, pl. 1, f. 5 and 8; Lamarck, An. San. Vert., VI, pt. 2nd, p. 148; Pfeiffer, p. 74, pl. 4, f. 30, 31; Turton, Man., p. 93, f. 75; Fleming, Brit. An., p. 257; Alder, Mag. Zool. and Bot., II, p. 112; Brard, p. 103, pl. 3, f. 7, 8; Jeffreys, Linn. Tr., XVI, p. 63; Thompson, Ann. and Mag. Nat. Hist., VI, p. 51; *Cyclostomus elegans*, De Montfort, II, p. 287; *Turbo elegans*, Montagu, Test. Brit., p. 342, pl. 22, f. 7; Maton and Rackett, Linn. Tr., VIII, p. 167; Brown, Wernerian Mem., II, p. 522; Ib., Ency. Brit., VI, p. 456; Fleming, Edin. Ency., VII, p. 74, pl. 203, f. 10; *Turbo tumidus*, Pennant, Brit. Zool., IV, p. 128, pl. 82, f. 110; *Turbo striatus*, Da Costa, p. 86, pl. 5, f. 9; Donovan, Brit. Sh., II, pl. 59; *Nerita elegans*, Müller, Verm., II, p. 177.

Shell tapering, oblong-ovate; body large, tumid; spire consisting of four ventricose volutions, and ending in an obtuse apex; whole external surface provided with numerous, close-set, raised, spiral striæ, crossed by finer longitudinal striæ, producing a reticulated appearance; aperture round, with a slight angular contraction above; outer lip thin, smooth on the edge, and continuous; inner lip slightly reflected on the columella, with a subumbilicus behind; colour usually cinereous, with a purplish tinge, and reddish-purple at the apex; frequently fasciated with two rows of purplish-brown spots, or interrupted bands, or in some instances longitudinally streaked with a similar colour; operculum horny externally, and testaceous on its inner surface, with a single depressed spiral line, and a series of fine striæ radiating from it towards the circumference. Length five-eighths of an inch; breadth three-eighths.

Found in the Limestone districts of England and Wales; and Portrush, Ireland.

2. *CYCLOSTOMA MARMOREA*, pl. XVIII, f. 15.

*Cyclostoma marmorea*, Brown, Edin. Jour. Nat. and Geo. Science, I, p. 12, pl. 1, f. 10, 11.

Shell oblong-ovate; body large, inflated; spire small, consisting of four deeply divided volutions, abruptly tapering to an obtuse apex; aperture quite orbicular; outer lip united all round; pillar lip slightly reflected on the columella, behind which is a deep umbilicus; whole surface smooth, glossy, of a pale ash colour, covered with zig-zag markings of a reddish chestnut-brown, which form four spiral fasciæ on the lower volution, and gradually become obsolete on the superior portion of the spire.

I noticed this elegant shell in the cabinet of my friend James Gerard, Esq., Edinburgh, associated with some British specimens of *Cyclostoma elegans*, to which it is closely allied in form, but may at once be distinguished from that shell in being totally devoid of striæ, which in the *elegans* are very strong and conspicuous.

#### GENUS 43.—CARYCHIUM.—Müller.

Shell oblong or cylindrical, with gradually increasing volutions, few in number; aperture straight, short, with folds on the columella.

1. *CARYCHIUM MINIMUM*, pl. XIV, f. 10, and pl. XVIII, f. 15.—First Ed., pl. 41, f. 10.

*Carychium minimum*, Müller, Verm., II, p. 125; Pfeiffer, I, p. 72, pl. 3, f. 45, 46; Leach, Moll., p. 133; Jeffreys, Linn. Tr., XVI, p. 365; Fleming, Brit. An., p. 270; Forbes, Mal. Mon., p. 12; Alder, Mag. Zool. and Bot., II, p. 114; Thompson, Ann. and Mag. Nat. Hist., VI, p. 42; *Odostomo carychium*, Fleming, Edin. Ency., VII, p. 76; *Auricella carychium*, Hartman, p. 49; *Auricula minima*, Draparnaud, Moll., p. 57, pl. 3, f. 18, 19; *Turbo carychium*, Montagu, Test. Brit., p. 339, pl. 22, f. 2; Maton and Rackett, Linn. Tr., VIII, p. 184; Brown, Ency. Brit., 6th Ed., VI, p. 457.

Shell conic, glossy, pellucid, white; body and spire of about equal length; the latter consisting of four very gradually tapering, minutely striated volutions, well defined by the suture, terminating in a somewhat obtuse apex; aperture semioval, or auriform, rounded both above and below; columella provided with two tooth-like folds, and sometimes a small rudimentary one above the others; outer lip with a thickened margin, and in its centre a tooth-like knob. Length hardly a line; breadth one-third its length.

This is the most minute of all the land shells, and is found pretty generally diffused at the roots of grass, or on mossy banks, in woods, and other moist situations.

#### GENUS 44.—ACME.—Hartmann.

Shell subcylindrical, terminating in a blunted apex; aperture ovate, simple; outer lip simple, thin, slightly reflected over the columella, forming a subumbilicus.

1. *ACME FUSCA*, pl. XIV, f. 25.—First Ed., pl. 41, f. 25.

*Acme lineata*, Hartmann, Sturm, Faun., pl. 1, f. 4; *Acme fusca*, Thompson, Ann. and Mag. Nat. Hist., VI, p. 43; *Turbo*



*fuscus*, Walker, Test. Min. Rar., p. 112, pl. 2, f. 42; Montagu, Test. Brit., p. 330; Wood, Sup., pl. 6, f. 15; *Carychium cochlea*, Studer, Catal., p. 21; *Carychium fuscum*, Fleming, Brit. An., p. 270; Jeffreys, Linn. Tr., XVI, p. 364; *Carychium lineatum*, Férussac, Tab. Syst., p. 100; Rossmassler, V, p. 54, pl. 28, f. 408; *Cyclostoma lineatum*, Férussac, Dict. Class. Hist. Nat., II, p. 90; *Auricula lineata*, Drapernaud, Hist., p. 57, pl. 3, f. 20, 21; *Balimus lineatus*, Turton, Man., p. 82, f. 66; Ib., Zool. Journ., II, p. 565.

Shell cylindrical, of a brown colour, and extremely glossy; body somewhat shorter than the spire; which consists of five nearly flat volutions, decreasing but little in diameter, except the two upper ones, which are a little less, somewhat paler, and terminating in a blunted apex; volutions divided by a well marked suture, and covered with remote, regular, longitudinal striæ, which are invisible without the aid of a strong lens; aperture subovate; pillar lip slightly reflected on the columella, with a small subumbilicus behind; outer lip thin, and even. Length about the tenth of an inch; diameter nearly a sixth.

Found in damp situations amongst moss and jungermanniæ.

2. ACME MINUTA, pl. XIV, f. 26.—First Ed., pl. 41, f. 26.

Shell cylindrical, smooth, shining, and of a greenish-brown colour; spire consisting of four slightly raised volutions, separated by a well marked suture, and terminating in an obtuse apex; aperture subovate; pillar lip slightly reflected on the columella; outer lip thin, and even on the edges. Length about the tenth of an inch; diameter not a sixth.

I found this minute species at Douglas Castle, Lanarkshire, amongst jungermanniæ, in the low meadow land below the old tower.

This species may be distinguished from the *A. fusca* by being longer in proportion to its breadth, in the volutions being more inflated, and in being entirely destitute of spiral striæ.

## Section II.—Animals with four tentacula.

### GENUS 45.—SUCCINEA.—Drapernaud.

Shell subovate, or ovately conical, mostly elongated; spire short; aperture longitudinal, oblique, large, entire, and usually about two-thirds the length of the shell; margin of the outer lip thin, sharp, and not reflected, united to the columellar lip below; columella smooth, sharp-edged, narrow, and attenuated; inner lip spread over a small portion of the body volution.

The shells of this genus are distinguished from the *Lymnæa*, by being destitute of the oblique fold on the columella.

1. SUCCINEA AMPHIBIA, pl. XIV, f. 41, 42.—First Ed., pl. 42, f. 41, 42.

*Succinea amphibia*, Drapernaud, Hist. Moll., p. 58, pl. 3, f. 22, 23; Lamarck, An. San. Vert., VI, p. 135; Pfeiffer, p. 67, pl. 3, f. 36 and 38; Sowerby, Genera, f. 3; Brard, p. 72, pl. 3, f. 1; Turton, Man., p. 91, f. 73; Alder, Mag. Zool. and Bot., II, p. 106; *Succinea putris*, Fleming, Brit. An., p. 267; Jeffreys, Linn. Tr., XVI, p. 325 and 505; Thompson, Ann. and Mag. Nat. Hist., VI, p. 35; *Succinea Mülleri*, Leach, Moll., p. 78; *Helix putris*, Linné, Syst. Nat., I, p. 1249; Donovan, Brit. Sh., pl. 168, f. 1; *Helix succinea*, Müller, Verm., II, p. 97; Brown, Wernerian Mem., II, p. 530; Maton and Rackett, Linn. Tr., VIII, p. 218; *Lymnea succinea*, Fleming, Edin. Ency., VII, p. 77; *Helix limosa*, Dillwyn, Des. Cat., p. 965.

Shell oblong-ovate, smooth, extremely thin and pellucid, and glabrous, of a greenish or yellowish-amber colour; body very large; spire very small, nearly perpendicular to the base, or slightly oblique, consisting of three rapidly diminishing volutions, terminating in an acute apex; aperture very large, occupying about three-fourths the shell, narrowed above, and rounded beneath; outer lip plain, sharp, and very thin. The columella is visible through its entire length.

2. SUCCINEA GRACILIS, pl. XIV, f. 34, 35.—First Ed., pl. 42, f. 34, 35.

*Succinea gracilis*, Alder, Mag. Zool. and Bot., II, p. 106; *Succinea oblonga*, Leach, Moll., MSS.; Turton, Man., p. 92, f. 74; Alder, Cat. 6, No. 20; *Succinea Pfeifferi*, Rossmassler, Icon., pl. 92, f. 46; Thompson, Ann. and Mag. Nat. Hist., VI, p. 35; *Succinea amphibia*, var. *b*, Pfeiffer, p. 67, pl. 3, f. 37, var. *β*; Nilson, p. 41, γ and δ; Drapernaud, Moll., f. 23; *Succinea putris*, var. *a*, Jeffreys, Linn. Tr., XVI, p. 325 and 505; *Helix putris*, Montagu, Test. Brit., p. 376, pl. 16, f. 4.

Shell oblong-ovate, slender, pellucid, shining, and of a bright amber colour; body very large; spire very small, consisting of three rapidly diminishing volutions, with an acute apex; aperture very large, oblong-ovate, contracted above, wide and rounded below, and placed very oblique; outer lip thin, and sharp at the edge.

Variety 1, pl. XVIII, f. 22, 23. This elegant variety of the species was found at Beaumaris, Anglesea, North Wales, by my friend Thomas Glover, Esq., of Smedley Hill, Manchester. It is much thicker in proportion to its size, and of a deep flesh colour; the spire is also more inflated than the ordinary specimens.

This shell seldom attains the same size as the *S. amphibia*, and may readily be distinguished by its very oblique aperture, and in being more elongated. It inhabits the banks of ponds, rivers, and streams.

3. SUCCINEA OBLONGA, pl. XVIII, f. 21.

*Succinea oblonga*, Drapernaud, Hist. des Moll., p. 59, pl. 3, f. 24, 25; Pfeiffer, p. 68, pl. 3, f. 39; Jeffreys, Linn. Tr., XVI, p. 325 and 505; Alder, Mag. Zool. and Bot., II, p. 106; Johnston, Proceedings Berwickshire Nat. Hist. Club, p. 154.

Shell oval, shining, pellucid, and of a pale amber colour; body large; spire small, consisting of three well defined volutions, terminating in an acute apex; aperture very large, contracted above, and expanded and round below; outer lip thin, and acute at the edge. Length a quarter of an inch; diameter not an eighth of an inch.

Found on the margin of ditches at Bathgate, Lanarkshire, by Mr. Kenyon of Preston; at Britonferry, near Swansea, by Mr. Jeffreys; and near Berwick-upon-Tweed, by Dr. Johnston.

### GENUS 46.—ACHATINA.—Lamarck.

Shell ovate, or oblong; body large; spire short in most species, but it is sometimes lengthened and elevated; aperture entire, longitudinal; outer lip thin, never reflected; inner lip but slightly spread over the base of the body; columella smooth, and destitute of folds or teeth, and truncated at the base.

Distinguished from *Bulimus* by the abrupt termination of the pillar lip.

1. *ACHATINA ACICULA*, pl. XIV, f. 82, and pl. XVIII, f. 12.—First Ed., pl. 41, f. 82.

*Achatina acicula*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 133; Fleming, Brit. An., p. 267; Turton, Man., p. 89, pl. 71; Alder, Mag. Zool. and Bot., II, p. 110; Thompson, Ann. and Mag. Nat. Hist., VI, p. 37; *Bulimus acicula*, Bruguière, Ency. Meth., 22; Drapernaud, Hist. de Moll., p. 75, pl. 4, f. 25, 26; Brard, p. 100, pl. 3, f. 21; *Buccinum terrestre*, Montagu, Test. Brit., p. 248, pl. 8, f. 3; Maton and Rackett, Linn. Tr., VIII, p. 139; *Buccinum acicula*, Müller, Verm., II, p. 150; Dillwyn, Des. Cat., p. 652; *Cionella acicula*, Jeffreys, Linn. Tr., XVI, p. 348.

Shell white, pellucid, smooth, glossy; body occupying about half the length of the shell; spire taper, consisting of five nearly flat-sided volutions, well defined by the suture; aperture oblong-ovate, subtruncated at the base; outer lip thin, even; pillar lip thickened, and a little reflected on the columella. Length a quarter of an inch; and hardly a fourth of its length in diameter.

This species is not uncommon in many parts of Great Britain and Ireland. It inhabits the roots of grass and trees, especially where there are limestone rocks; plentiful in Barham Downs, Kent; Lackham, Wiltshire; and at Miltown Malbay, in the neighbourhood of Dublin; La Bergerie, Queen's County; Castle Martyr, near Cork; and at Dromana, County of Waterford, by Miss M. Ball of Dublin.

#### GENUS 47.—BULIMUS.—Lamarck.

Shell oval, or oblong, generally thin, and covered with a slender epidermis; spire obtuse, variable in length, and in the number of its volutions, which for the most part are few; aperture oval, wide, anteriorly rounded; outer lip simple, reflected, continuous, and joining the columella without an emargination; columella smooth, straight, without a truncature, or widening at the base.

1. *BULIMUS OBSCURUS*, pl. XIV, f. 19, and pl. XVIII, f. 13.—First Ed., pl. 41, f. 19.

*Bulimus obscurus*, Drapernaud, Hist. des Moll., p. 74, pl. 4, f. 23; Pfeiffer, I, p. 52, pl. 3, f. 11; Brard, p. 97, pl. 3, f. 19; Fleming, Brit. An., p. 265; Turton, Man., p. 81, f. 63; Jeffreys, Linn. Tr., XVI, p. 343; Alder, Mag. Zool. and Bot., II, p. 109; Thompson, Ann. and Mag. Nat. Hist., VI, p. 35; *Bulimus hordaceus*, Bruguière, Ency. Meth., p. 331, No. 62; Lamarck, An. San. Vert., VI, pt. 2nd, p. 125; *Ena obscura*, Leach, Moll., p. 113; *Helix obscura*, Müller, Verm., p. 103; Montagu, Test. Brit., p. 391, pl. 22, f. 5; Maton and Rackett, Linn. Tr., VIII, p. 212, pl. 5, f. 11; Brown, Wernerian Mem., II, p. 529; Ib., Ency. Brit., 6th Ed., VI, p. 461; *Turbo rupium*, List. Angl., pl. 2, f. 3; Da Costa, Brit. Conch., p. 90.

Variety *a*, pl. XIV, f. 21.

Shell subcylindrical, subconic, of an opaque brownish horn-colour; body not half the length of the shell; spire consisting of five or six somewhat inflated volutions, well defined by the suture, covered with longitudinal slight substriæ, or wrinkles, and terminating in a rather obtuse apex; aperture oblong-oval; outer lip even, and white; inner lip white, and reflected on the columella, with a slight subumbilicus behind. Length three-eighths of an inch; diameter one-third its length.

The young shell is conical, or pyramidal, and in the very early stages trochiform; with the aperture subquadrangular.

This species can only be distinguished from the *B. montanus* by its inferior size, its white lip, and in its volutions being somewhat more inflated.

Found amongst moss in moist places, under stones, and on old walls, and also on rocks; in which last locality we found some fine specimens near Sunderland.

I found a very distinct variety of this species in the limestone quarry on the top of the East Lomond hill, Fifeshire, and named it *B. brevis*, pl. XIV, f. 21. It differs from the ordinary variety in being much shorter, and greatly more inflated in proportion to its size, with the apex more acute.

2. *BULIMUS MONTANUS*, pl. XIV, f. 22, and pl. XVIII, f. 14.—First Ed., pl. 41, f. 22.

*Bulimus montanus*, Drapernaud, Hist. des Moll., p. 74, pl. 4, f. 22; Pfeiffer, I, p. 52, pl. 3, f. 10; Sturm, Fauna, VI, pl. 6; Turton, Man., p. 80, f. 62; Alder, Mag. Zool. and Bot., II, p. 109; *Bulimus montacutus*, Jeffreys, Linn. Tr., XVI, p. 345; *Bulimus Lackhamensis*, Fleming, Brit. An., p. 265; Thompson, Ann. and Mag. Nat. Hist., VI, p. 35; *Ena montana*, Leach, Moll., p. 113; *Helix Lackhamensis*, Montagu, Test. Brit., p. 394, pl. 11, f. 3; Brown, Wernerian Mem., II, p. 529; Ib., Ency. Brit., 6th Ed., VI, p. 461; Maton and Rackett, Linn. Tr., VIII, p. 212.

Shell subconic, oblong, of a dull rusty or reddish-brown, longitudinally, obliquely, and irregularly wrinkled, or striated, somewhat like shagreen when viewed through a strong lens; body a little more than a third of the shell in length; spire consisting of six nearly flat-sided volutions, well divided by the suture line, terminating in a rather obtuse apex; aperture subovate; outer lip reflected, and of a chocolate-brown colour; pillar lip reflected on the columella, forming a subumbilicus behind it. Length somewhat more than five-eighths of an inch; and a quarter of an inch in diameter.

Found at Lackham, in Wiltshire, by Colonel Montagu; met with sparingly in the debris of Salisbury Crags, at Edinburgh; and I found it at Castle Willan, near Maryborough, Queen's County; and in the debris of the mountains of Mourne, Ireland.

The young shells of this, like those of the preceding species, are trochiform; and the adult is liable to considerable variety in colour.

3. *BULIMUS LUBRICUS*, pl. XIV, f. 20.—First Ed., pl. 41, f. 20.

*Bulimus lubricus*, Bruguière; Lamarck, An. San. Vert., VI, pt. 2nd, p. 126; Drapernaud, Hist. des Moll., p. 75, pl. 4, f. 24; Brard, p. 98, pl. 3, f. 20; Pfeiffer, I, p. 50, pl. 3, f. 7; Turton, Man., p. 82, f. 65; Fleming, Brit. An., p. 265; *Achatina lubrica*, Thompson, Ann. and Mag. Nat. Hist., VI, p. 36; Alder, Mag. Zool. and Bot., II, p. 110; Forbes, Mal. Mon., p. 10; *Cionella lubrica*, Jeffreys, Linn. Tr., XVI, p. 347; *Zua lubrica*, Leach, Moll., p. 114; *Helix lubrica*, Müller, Verm., II, p. 104; Montagu, Test. Brit., p. 390, pl. 22, f. 6; Brown, Wernerian Mem., II, p. 529; Ib., Ency. Brit., 6th Ed., VI, p. 461; Maton and Rackett, Linn. Tr., VIII, p. 213, pl. 5, f. 12; *Turbo glaber*, Da Costa, Brit. Conch., p. 87, pl. 5, f. 18.

Shell extremely smooth, glossy, and pellucid, of a brown or greenish horn-colour; body about half the length of the shell;

spire consisting of five slightly inflated volutions, well defined by the line of the suture, and terminating in a somewhat obtuse apex; aperture oval; outer lip rather thick, but not marginate, or reflected; pillar lip a little replicated, but destitute of an umbilicus. Length a quarter of an inch; diameter one-third its length.

Not uncommon in moist situations, residing principally on the ground, under old trees, and on the banks of ditches.

4. *BULIMUS ACUTUS*, pl. XIV, f. 18.—First Ed., pl. 41, f. 18.

*Bulimus acutus*, Bruguière, Ency. Meth., p. 42; Draper-  
naud, Hist. des Moll., p. 77, pl. 4, f. 29, 30; Lamarck, An.  
San. Vert., VI, pt. 2nd, p. 125; Fleming, Brit. An., p. 265;  
Jeffreys, Linn. Tr., XVI, p. 346; Alder, Mag. Zool. and Bot.,  
II, p. 109; Forbes, Mal. Mon., p. 10; Thompson, Ann. and  
Mag. Nat. Hist., VI, p. 36; *Bulimus fasciatus*, Turton, Man.,  
p. 84, f. 67; and p. 86, f. 79, *Bulimus ventricosus*; *Helix*  
*acuta*, Müller, Verm., II, p. 110; Dillwyn, Des. Cat., p. 956;  
*Helix bifasciatus*, Maton and Racket, Linn. Tr., VIII, p. 210;  
Turton, Conch. Dict., p. 63; Brown, Wernerian Mem., II, p.  
529; *Turbo fasciatus*, Pennant, Brit. Zool., IV, p. 131, pl. 82,  
f. 119; Montagu, Test. Brit., p. 346, pl. 22, f. 1; Da Costa,  
Brit. Conch., p. 90; Donovan, Brit. Sh., I, pl. 18, f. 1, 1; *Elis-*  
*ma fasciata*, Leach, Moll., p. 109.

Shell oblong, taper, thin, subpellucid, of a yellowish or  
grayish-white, longitudinally streaked, or spirally banded with  
chestnut or umber-brown; body somewhat more than a third  
of the length of the shell; spire consisting of nine or ten some-  
what rounded volutions, not very deeply separated by the  
suture, and terminating in a rather acute apex; whole shell  
coarsely wrinkled longitudinally; aperture subovate; outer lip  
thin; inner lip a little reflected on the columella, with a small  
subumbilicus behind. Length nearly three-quarters of an inch;  
diameter a quarter.

This species is liable to considerable variety in its markings;  
sometimes it is longitudinally streaked, at others having a single  
band of interrupted spots at the base of the volutions, in some  
instances it has two bands, which, at the base often become  
confluent, and not unfrequently it is nearly white. It is also  
liable to some variations in shape and size.

Found on many of the sand and bent pastures of Great  
Britain and Ireland, near the sea shore; and although local in  
its habitat, generally very abundant where it is found.

#### GENUS 48.—*BALÆA*.—Gray.

Shell thin, with the convolutions reversed, covered with a  
slender brown epidermis; body short; spire long and taper, with  
many volutions, gradually decreasing in size as they ascend;  
aperture small, subquadrate; outer lip entire, a little thickened,  
with a slight fold on the columella; base entire.

1. *BALÆA FRAGILIS*, pl. XIV, f. 11.—First Ed., pl. 41,  
f. 11.

*Balæa fragilis*, Leach, Moll., p. 116; Turton, Man., p. 87,  
f. 70; Alder, Mag. Zool. and Bot., II, p. 111; *Balea fragilis*,  
Gray, Zool. Journ., I, p. 61; Forbes, Mal. Mon., p. 11; *Balea*  
*perversa*, Fleming, Brit. An., p. 271; *Balæa perversa*, Thomp-  
son, Ann. and Mag. Nat. Hist., VI, p. 41; *Odostomia perversa*,

Fleming, Edin. Ency., VII, p. 76; *Clausilia fragilis*, Jeffreys,  
Linn. Tr., XVI, p. 351; *Pupa fragilis*, Drapernaud, Hist. des  
Moll., p. 68, pl. 4, f. 4; *Turbo perversus*, Montagu, Test. Brit.,  
p. 355, pl. 11, f. 12; Maton and Racket, Linn. Tr., VIII, p.  
181, pl. 5, f. 2; Brown, Ency. Brit., 6th Ed., VI, p. 456.

Shell elongated, subpellucid, thin, with a yellowish-brown  
epidermis; body short; spire very long, consisting of from five  
to eight somewhat ventricose volutions, well defined by the  
suture, and terminating in a slightly obtuse apex; aperture  
subquadrate; outer lip thin, white, a little reflected; pillar lip  
white, narrowly reflected on the columella, with a small sub-  
umbilicus behind; whole shell covered with slender longitudinal  
striae. Length seldom exceeding a quarter of an inch; dia-  
meter a fourth of its length.

Old shells are frequently furnished with an obsolete tooth-  
like fold about the middle of the columella.

This species has much the aspect of a *Clausilia*, and may be  
mistaken for a young shell of that genus, but is distinguished  
by the body being convex and simple, and destitute of the  
carinated ridge near the outer edge, as in the young *Clausiliae*.  
The volutions being sinistral, will at once mark it from the  
genera *Pupa* and *Bulimus*.

This is a very local species, inhabiting the trunks of trees,  
under the loose bark, or lurking in the Lichens which invest  
the bark; and is not unfrequently met with in the clefts of  
rocks.

#### GENUS 49.—*CLAUSILIA*.—Drapernaud.

Shell sinistral, elongated, fusiform, turreted, slender; spire  
with numerous volutions, terminating in a somewhat obtuse, or  
papillary apex, and swelling gradually towards the body—some  
species are thickest in the centre; aperture ovate, irregular,  
oblique, peretreme, continuous, united all round, the lip gene-  
rally thickened on the edge, and reflected; columella furnished  
with tooth-like plaits, and a small spiral, elastic, shelly plate,  
attached by an elastic pedicle to the columella teeth within;  
destitute of an operculum.

The shelly bone which is attached to the columellar teeth is  
termed the *clausium*, and from whence the generic name is  
derived. Its function seems to be, to close up the aperture,  
when the animal has receded within its shell. A highly dis-  
tinctive character in the shells of this genus, is, that the body  
is usually less in diameter, than the volution next it.

*Section I.*—Shell smooth; the *clausium* or shelly plate with  
a notch at top, fitting into a plait situated on the outer lip of  
the aperture.

1. *CLAUSILIA BIDENS*, pl. XIV, f. 12.—First Ed., pl. 41,  
f. 12.

*Clausilia bidens*, Drapernaud, Hist. des Moll., p. 60, pl. 4, f.  
5, 6, 7; Pfeiffer, p. 60, pl. 3, f. 25; Brard, p. 83, pl. 3, f. 9;  
Alder, Mag. Zool. and Bot., II, p. 110; Rossmassler, Icon., I,  
p. 76, pl. 2, f. 29; Fleming, Brit. An., p. 271; Thompson,  
Ann. and Mag. Nat. Hist., VI, p. 42; *Helix bidens*, Müller,  
Verm., II, p. 116, No. 315; *Turbo laminatus*, Montagu, Test.  
Brit., p. 359, pl. 11, f. 4; *Clausilia lamellata*, Leach, Moll., p.  
118; Turton, Man., p. 70, f. 53; *Bulimus bidens*, Bruguière,  
Ency. Meth., p. 352, No. 93.



Shell with from ten to twelve reversed, smooth, glossy, pellucid volutions, of a reddish horn-colour; body volution very small; spire very long; the volutions thickening towards the middle, and tapering from thence to a small, somewhat obtuse, and rounded point; each of the volutions swelling a little in the centre, and the whole well defined by the suture line; aperture suborbicular, compressed, thickened, and white at the upper outer margin, where it unites with the body; outer lip white, slightly marginated and reflexed, with two laminar plaits or folds, one of which is straight, situate near the superior portion of the aperture, and nearly central, the other somewhat curved, placed in the middle of the pillar lip, and frequently crenated; deep within the aperture are situate three or four prominent ridges, which are discernible when held up betwixt the observer and the light. General length three-quarters of an inch; diameter, one-fourth of its length; the clausium is emarginate.

This species is subject to some variation in colour and diameter; some specimens being of a greenish-yellow, while others are more ventricose in the centre; it also differs a little in length.

The favourite resort of this species is a calcareous soil; it is to be met with in woods of beech trees, and has been found at Bow Wood, the seat of the Marquis of Lansdowne, Lackham Wood, Wiltshire; and I found it, of a large size, on the bark of a decayed tree at Hexham; and at Dove Dale, Derbyshire, by William Thompson, Esq. It has been found at Belamont Forest, near Coothill, County of Cavan, Ireland, by my friend T. W. Warren, Esq., of Dublin, and on trees, in the demesne of Florence Court, County of Fermanagh, by that able conchologist, William Thompson, Esq., of Cork.

This is a very local species, and certainly the most beautiful of our native *Clausilia*.

*Section II.—Shells corrugated; and with the clausium entire at the top.*

2. *CLAUSILIA BIPPLICATA*, pl. XIV, f. 13.—First Ed., pl. 41, f. 13.

*Clausilia biplicata*, Leach, Moll., p. 120; Alder, Mag. Zool. and Bot., II, p. 110; Fleming, Brit. An., p. 271; Turton, Man., p. 72, f. 55; *Clausilia Montagu*, Gray, Ann. Phil., p. 13; *Clausilia verrucosa*, Draparnaud, Hist. des Moll., p. 71, pl. 4, f. 11; Pfeiffer, p. 63, pl. 3, f. 29; Jeffreys, Linn. Tr., XVI, p. 354; *Clausilia similis*, Rossmassler, Icon., p. 177, pl. 2, f. 30; *Turbo biplicatus*, Montagu, Test. Brit., p. 361, pl. 11, f. 5; *Helix perversa*, adult, Müller, Verm., II, p. 118; *Helix cocholodina ventricosula*, Férussac, pl. 63.

Shell opaque grayish-brown; with twelve or thirteen reversed volutions; whole surface covered with numerous, longitudinal, strong, regular, slightly oblique striæ; volutions well defined by the sutural line, which is rather deep, and terminating in a somewhat blunted apex; aperture suborbicular, rounded below, considerably compressed above, and a little sinuous at the upper and inner angle; provided internally with two plaits, one situate near the top of the pillar lip, and the other about half way down the base of the columella, their points approximating to each other as they recede inwardly; lips thick, white, and continuous and detached all round.

This species is distinguished from *C. bidens* by its colour, superior size, and particularly in the shape of the aperture, the margins of which are reflexed and produced, and the teeth are much closer together in proportion to the size of the shell.

First identified as a British species by Colonel Montagu, who discovered it at Easton Grey, Wiltshire, and has been found in Hyde Park, London. Its chief habitation is in woods and close-set hedges.

3. *CLAUSILIA RUGOSA*, pl. XIV, f. 14.—First Ed., pl. 41, f. 14.

*Clausilia rugosa*, Draparnaud, Hist. des Moll., p. 73, pl. 4, f. 19, 20; Pfeiffer, p. 63, pl. 3, f. 30; Leach, Moll., p. 121; Turton, Man., p. 74, f. 58; Alder, Mag. Zool. and Bot., II, p. 111; *Clausilia perversa*, Fleming, Brit. An., p. 271; *Clausilia nigricans*, Jeffreys, Linn. Tr., XVI, p. 351; Thompson, Ann. and Mag. Nat. Hist., VI, p. 42; *Clausilia parvula*, Leach, MSS.; Turton, Zool. Journ., II, p. 556; Ib., Man., p. 74, f. 58; Jeffreys, Linn. Tr., XVI, p. 352; *Turbo nigricans*, Dillwyn, Cat., p. 375; *Turbo perversus*, Pennant, Brit. Zool., IV, p. 130, pl. 82, f. 116; *Turbo bidens*, Montagu, Test. Brit., p. 357, pl. 11, f. 7; Brown, Ency. Brit., 6th Ed., VI, p. 556; *Helix perversa*, Müller, Verm., p. 118; Brown, Wernerian Mem., II, p. 523.

*Variety 1. Shell smaller, and more slender in form.*

*Variety 2. Shell shorter, with fewer volutions.*

*Clausilia Everettii*, Ann. Phil., N. series, XIX, p. 377.

Shell somewhat opaque, blackish or chocolate-brown, frequently with ash-coloured or whitish longitudinal streaks, slender; with about twelve volutions, slightly inflated in the middle, and covered with elevated, granular, longitudinal striæ; aperture oval, the inner lip a little contracted, the columella provided with three plaits, the lower one placed interiorly, and scarcely discernible in the adult shell; lips thick, detached from the body, and pure white. Length generally about half an inch.

This is the most common species of *Clausilia*; inhabiting rocky or woody situations; it is subject to great variety in size, and even diameter.

The *Clausilia parvula* of Dr. Turton's Land and Fresh Water Shells, is only a variety of this species.

4. *CLAUSILIA ROLPHII*, pl. XVIII, f. 31.

*Clausilia Rolphii*, Leach, MSS.; Ib., Mollusc. ined., p. 119; Férussac, Journ. Phys., 1820, p. 301; Alder, Mag. Zool. and Bot., II, p. 111; Turton, Man., p. 71, f. 54; *Clausilia Iphigenia Rolphii*, Gray, Med. Rep., 1821, p. 182; Ib., Ann. Phil., p. 15; Turton, Man., p. 71, f. 54; *Clausilia plicatula*, Draparnaud, Hist. des Moll., p. 74, pl. 4, f. 17, 18; Rossmassler, Icon., p. 39, pl. 2, f. 32; Jeffreys, Linn. Tr., XVI, p. 353; Brard, p. 85, pl. 3, f. 10.

Shell thin, opaque, ventricose in the middle, of a grayish-brown horn-colour; body very short; spire very long, consisting of nine or ten rather narrow volutions, each of which are somewhat inflated in the centre, and terminating in an obtuse apex; the whole surface covered with close-set, elevated, longitudinal striæ; aperture subovate, sinuous at the outer and upper angles; outer and inner lips white, thick, and detached all round; provided with four or five plaits on the columellar, two of which are longer than the others.

This species is subject to the following very distinct varieties:

1. With four plaits, the middle ones less than the others.
2. With five plaits, the three middle ones less than the others.
3. With five plaits, the three lower ones less than the others.

Found first in Britain by Mr. Rolph, in Charlton Wood, Kent; and Mr. Gray has met with it at Hastings, Sussex. Its habitat is in damp woody situations, among moss, and on the trunks of trees.

5. *CLAUSILIA DUBIA*, pl. XVIII, f. 32.

*Clausilia dubia*, Draparnaud, Hist. des Moll., p. 142, pl. 4, f. 10; Alder, Mag. Zool. and Bot., II, p. 111; *Clausilia rugosa*, var., Alder, l. c., p. 32; *Clausilia similis*, Gilbertson, MSS.

Shell dark umber-brown, ventricose; body long; spire small, consisting of from nine to eleven rather inflated volutions; covered with pretty strong, elevated, somewhat granular striæ, in consequence of a few spiral ridges on the lower volutions; aperture oblong-ovate, contracted above, and a little rounded below; lips white, rather narrow; columella with two plaits, the superior one placed near the upper portion of the aperture and pointing downwards, the lower one near the under side, internally bifurcate, and pointing upwards. Size, about five-eighths of an inch long, and one-eighth in diameter.

It is known from *Clausilia rugosa* by being longer, and more ventricose.

Found in the North of England, under moss in rocky situations.

GENUS 50.—PUPA.—Lamarck.

Shell oblong, cylindrical, thick; spire with numerous volutions, terminating in an obtuse apex; aperture elliptical for the most part, sometimes a little square at the upper extremity, and rounded anteriorly; peretreme and inner lip continuous, slightly thickened, and reflected; upper part of the aperture frequently provided with a single tooth within: many of the species furnished with longitudinal ribs.

The young shells of the genus *Pupa* are trochiform, with a simple cavity at the base. Mr. Alder first pointed out a remarkable structure in the interior of *Pupa umbilicata* and *P. Anglica*. This consists of a raised thread-like laminar process winding spirally round the columella, and a similar lamina running spirally on the upper side of the volutions, with a series of small, flat, nearly transverse, testaceous plaits, situate at intervals, in the interior of the volutions. These are somewhat analogous to the septa in the genus *Segmentina*. These plaits are not, however, continued through the lower volutions. Their use has not yet been ascertained.

1. PUPA MUSCORUM, pl. XIV, f. 7.

*Pupa muscorum*, Draparnaud, Hist. des Moll., p. 59, var. *a*; Pfeiffer, I, p. 57, pl. 3, f. 17, 18; *Pupa delucida*, Rossmassler, VI, p. 15, pl. 23, f. 326; *Bulimus muscorum*, Bruguière, Ency. Meth., p. 334, No. 63; *Helix muscorum*, Müller, Verm. Hist., II, p. 105, No. 304; *Turbo muscorum*, Linnæus, Syst. Nat., p. 1240, No. 651; Chemnitz, Conch., IX, pl. 3, f. 3; Maton and Racket, Linn. Tr., VIII, p. 182; Turton, Brit. Fau., p. 184; Donovan, Brit. Sh., III, pl. 80.

Shell subcylindrical, smooth, glossy; body somewhat shorter than the spire, which consists of four rather broad volutions, gradually tapering to a somewhat obtuse apex; aperture subovate, destitute of teeth; outer lip white, rather narrow above, but widening a little below; pillar lip narrow; whole surface of a fulvous brown-colour.

Found at the Rabbit Burrow, Portmarnock, Ireland; near Weymouth, Dorsetshire; at Corstorphin Hill, near Edinburgh, and in the park of the Earl of Rothes, near Leslie, Fifeshire, on the bark of trees and among moss.

This seems the true *P. muscorum* of Linnæus; and I cannot agree with Rossmassler and other modern authors, in considering the *P. unidentata* and *bidentata* as varieties of this species.

2. PUPA UNIDENTATA, pl. XIV, f. 4.—First Ed., pl. 41, f. 4.

*Pupa unidentata*, Pfeiffer, Land un Was. Sn., I, p. 58, pl. 3, f. 19, 20; *Pupa muscorum*, Gärt, Conchyl. der Wetterau, S. 20; Rossmassler, I, p. 83, pl. 2, f. 37; *Turbo muscorum*, V. Alten, Erd-und Flussconchyl., un Augsb., S. 23.

Shell smooth, brownish horn-coloured, subcylindrical; consisting of seven narrow, slightly inflated volutions, terminating in an obtuse apex; aperture suborbicular, sublunate above, with a single sharp, prominent tooth placed on the base of the body, margins white and smooth. Length a little more than an eighth of an inch; diameter a third of its length.

Distinguished from *P. marginata* by the single tooth being more acute, and placed farther forward.

Found with other species of *Pupa* at Portmarnock Rabbit Burrow, Ireland.

3. PUPA BIDENTATA, pl. XIV, f. 6.—First Ed., pl. 41, f. 6.

*Pupa bidentata*, Pfeiffer, I, p. 59, pl. 3, f. 21, 22.

Shell ovate, ventricose; body and spire of nearly equal length; the latter consisting of four considerably inflated volutions, the three superior ones rapidly diminishing, and terminating in a rather sharp apex; aperture subovate; outer lip slightly reflected, and white; pillar lip narrowly reflected on the columella, with a narrow subumbilicus behind it; whole surface covered with a chestnut-brown epidermis. Length not two lines; diameter equal to two-thirds its length.

Found at Portmarnock, Ireland.

This species is much shorter, in proportion to its breadth, than the *P. marginata*, and is always destitute of the rib behind its outer lip.

Notwithstanding the opinion of Rossmassler and other authors, I always have considered that the *P. muscorum*, *unidentata*, and *bidentata* are distinct species; for besides the dentition, the following distinctions will be found in the three nearly allied species of this genus. In *P. muscorum* the shell is subcylindrical, the whole volutions a little more oblique than in the other species, and gradually decreasing, with the apical one rather obtuse; and the body and first volution longer. *P. unidentata* is nearly cylindrical, the volutions are more transverse, the three apical ones diminishing more abruptly, with the superior one more pointed. *P. bidentata* is altogether a shorter shell in proportion to its breadth.

4. PUPA MARGINATA, pl. XVIII, f. 33, 34.

*Pupa marginata*, Draparnaud, Hist. des Moll., p. 61, pl. 3, f. 36, 37, 38; Pfeiffer, Land un Was. Sn., I, p. 59, pl. 3, f. 23, 24; Brard, p. 93, pl. 3, f. 15, 16; Turton, Man., p. 98, f. 79;

Jeffreys, Linn. Tr., XVI, p. 358; Thompson, Ann. and Mag. Nat. Hist., VI, p. 25; Forbes, Mal. Mon., p. 11; *Pupa muscorum*, Lamarck, VI, p. 111; Rossmassler, VI, p. 15, pl. 23, f. 5; *Turbo muscorum*, Brown, Ency. Brit., 6th Ed., VI, p. 457; *Turbo marginata*, Sheppard, Linn. Trans., XIV, p. 154; *Pupilla marginata*, Leach, Moll., p. 127; *Alæa marginata*, Jeffreys, Linn. Tr., XVI, p. 357.

Shell glossy, subpellucid, cylindrical, of a chestnut-brown colour; body about a third of the length of the shell; spire consisting of five or six slightly inflated, convex volutions, well defined by the sutural line, and terminating in an obtuse apex; aperture nearly orbicular, with a single, small, tubercular tooth, situate far back, at the central part of the aperture, on the front of the body volution; lips white, continuous, with a whitish rib placed externally behind the outer lip, but which is nearly obsolete in some specimens; lip thin and emarginate, slightly reflected, with a small subumbilicus placed behind it. Length somewhat more than an eighth of an inch; diameter about a third its length.

This species is pretty generally diffused throughout Great Britain and Ireland, inhabiting mossy banks or under stones, in the crevices of rocks or on old walls; and also under the bark on decayed trees.

Found at Castletown, Isle of Man, by my friend Edward Forbes, jun., Esq.

5. PUPA UMBILICATA, pl. XIV, f. 5.—First Ed., pl. 41, f. 5.

*Pupa umbilicata*, Draparnaud, p. 62, pl. 3, f. 39, 40; Lamarck, An. San. Vert., VI, pt. 2nd, p. 111; Jeffreys, Linn. Tr., XVI, p. 357; Rossmassler, pl. 23, f. 327; Alder, Mag. Zool. and Bot., II, p. 111; Thompson, Ann. and Mag. Nat. Hist., VI, p. 37; *Pupa muscorum*, Fleming, Brit. An., p. 268; *Pupilla Draparnaudii*, Leach, Moll., p. 126; *Turbo muscorum*, Montagu, Test. Brit., p. 335, pl. 22, f. 3; Brown, Ency. Brit., 6th Ed., VI, p. 457; *Helix umbilicata*, Daubeb, Hist. des Moll., No. 474; *Odostomia muscorum*, Fleming, Edin. Ency., VII, p. 76; *Jaminia muscorum*, Risso, E. M., IV, p. 88.

Shell cylindrical, ventricose, smooth, subpellucid, glossy, pale brownish horn-colour; body and spire nearly of equal length, the latter consisting of five or six narrow, considerably inflated volutions, terminating in a subacute apex; aperture elongated, sublunifform; outer and pillar lips rather broad, white, and slightly reflexed, with a single, large, laminar tooth at the superior outer angle of the aperture, and appears to be formed by an inflected prolongation of the outer lip; behind the columellar lip is a rather large umbilicus, bounded by a circular rib. Length somewhat more than the eighth of an inch; diameter about a third of its length.

Found on old walls, under stones, and the bark of trees, in many parts of Great Britain and Ireland; it is abundant in the latter country, as well as all its islands, especially where limestone and chalk prevail.

6. PUPA ANGLICA, pl. XVIII, f. 35, 36.

*Pupa Anglica*, Potiez and Michaud, Gal., I, p. 195, pl. 20, f. 1, 2; Alder, Mag. Zool. and Bot., II, p. 111; Thompson, Ann. and Mag. Nat. Hist., VI, p. 38; *Pupa ringens*, Jeffreys, Linn. Tr., XVI, p. 356; *Pupa tridentalis*, Michaud, Compl., p. 61, pl. 15, f. 28, 30; *Vertigo Anglica*, Férussac, Moll.; Turton, Man., p. 102, f. 82; *Turbo Anglicus*, Wood, Cat. Sup., pl. 6, f. n.

Shell ventricose, glossy; body short; spire long, consisting of five or six inflated volutions, well defined by the suture, the two superior ones decreasing in size rather suddenly; aperture somewhat elliptical, provided with five teeth, two on the base of the body, one of them central, and the other small and tubercular, one at the superior portion of the outer angle, parallel with, and united to the outer lip, and so much curved, as nearly to unite with a tubercle which is situate near the top of the outer lip, and forming a nearly circular area betwixt them; and an oblique, rather sharp tooth situate on the columella; outer lip flattened in front, reflected, and of a brownish hue; pillar lip broad, with a deep circular umbilicus behind it; whole shell with slight, longitudinal striæ, and covered with a dark reddish-brown or chocolate-coloured epidermis, and frequently grayish towards the apical region. Length two lines; diameter one line.

This interesting species, long considered as peculiar to England, inhabits woody situations, and has been found in various localities, namely, near Bristol, Exeter, Lancashire, and Twizil House, Northumberland; in Scotland it has been met with in a wood at Corstorphin, near Edinburgh, and at Ballantrae, Ayrshire, by Mr. Thompson of Belfast; who also found it in the County of Londonderry, Ireland, at the side of the river Bann, near its junction with the ocean, also in numerous localities throughout Down and Antrim, and on the mountain of Benbulbin in Sligo, glen of the Downs, Wicklow, and at the lower lake of Killarney; Mr. W. H. Harvey found it near Ballitore, and on sand hills at Miltown Malbay. In short, it seems universally diffused throughout Ireland.

7. PUPA JUNIPERI, pl. XIV, f. 1.—First Ed., pl. 41, f. 1.

*Pupa secale*, Draparnaud, p. 64, pl. 3, f. 49, 50; Pfeiffer, I, p. 55, pl. 3, f. 14; Jeffreys, Linn. Tr., XVI, p. 353; Rossmassler, Icon., p. 82, pl. 2, f. 35; Alder, Mag. Zool. and Bot., II, p. 111; *Turbo juniperi*, Montagu, Test. Brit., p. 340, pl. 12, f. 12; Brown, Ency. Brit., 6th Ed., VI, p. 457; Turton, Brit. Fau., p. 185; *Abida secale*, Leach, Moll., p. 165; *Vertigo secale*, Turton, Man., p. 101, pl. 7, f. 81; *Chondrus secale*, a, Hartmann, p. 218, No. 20; Sturm, VI, p. 7, pl. 4; *Torquilla secale*, Studer, Catal., p. 19; *Cochlodonta secale*, Férussac, Prod., p. 64.

Shell subcylindrical; body not quite a third of the length of the shell; spire consisting of seven or eight somewhat inflated, but narrow volutions, well defined by the sutural line, the four apical ones tapering rather abruptly, and terminating in a blunted apex; aperture somewhat square above and rounded below, and provided with seven or eight laminar teeth, two of which are placed on the pillar lip, three on the base of the body, the central one situate far back, and that next the outside long, sharp, standing obliquely inwards, and obtruding in front of the others, and three on the outer lip, the central one largest, and the lower one deeply seated; all the teeth of the outer lip are visible externally, shining through in the form of three pale, slightly spiral bands; outer lip white, acute, broad below, with a slight wave or sinus above, and reflected; pillar lip continuous with the outer one, and reflected, with an umbilicus behind; whole surface subopaque, of a dull grayish-brown colour, and covered with very fine, regular, longitudinally oblique striæ. Length upwards of a quarter of an inch; diameter equal to about a third of its length.



This species lives chiefly in districts where the chalk or Oolitic rocks prevail, its habitat being the roots of trees, and under stones, in dry situations.

In the young condition the shell has an earthy covering, and in this state is the *Helix ventricosa* of Müller.

#### GENUS 51.—VERTIGO.—Müller.

Shell subcylindrical, subfusiform, thin and transparent; volutions narrow, appearing as if squeezed together, gradually decreasing in size, and becoming abruptly obtuse at the apex; aperture contracted, sinuated, somewhat angular, toothed internally, margined; outer lip subreflected and simple.

*Section I.—Shells dextral, nearly cylindrical; aperture externally margined.*

##### 1. VERTIGO EDENTULA, pl. XVIII, f. 36.

*Pupa edentula*, Draparnaud, p. 59, pl. 3, f. 28, 29; Alder, Mag. Zool. and Bot., II, p. 112; Rossmassler, X, p. 28, pl. 49, f. 646; Turton, Man., p. 99, pl. 7, f. 80; Thompson, Ann. and Mag. Nat. Hist., VI, p. 39; *Vertigo nitida*, Férussac, Tab. Moll., p. 64; *Alæa nitidi*, Jeffreys, Linn. Tr., XVI, p. 358; *Alæa revoluta*, Jeffreys, Linn. Tr., XVI, p. 515 and 558; *Turbo oftenensis*, Sheppard, Linn. Trans., XIV, p. 155; *Turbo edentula*, Wood, Cat. Sup., pl. 6, f. 14.

Shell ovately conical, or subcylindrical, somewhat ventricose, of a transparent horn-colour; spire consisting of four or five well rounded volutions, which are deeply divided by the sutural line, and terminate in a slightly obtuse apex; the whole covered with nearly obsolete striæ; aperture semicircular, destitute of teeth; outer lip thin on the edge, without a rib behind; with a very minute umbilicus. Length a tenth of an inch.

Found in many localities in Great Britain and Ireland. Its favourite resort is marshy situations. Mr. Thompson says, "The typical form of *V. edentula* I generally find under stones; the elongated and cylindrical variety in woods—in autumn and winter this latter is most readily obtained on the fallen leaves of trees; in summer on the under side of the fronds of ferns."

The elongated variety has not unfrequently seven or eight volutions, and is often one and a half line in length.

##### 2. VERTIGO PYGMÆA, pl. XVIII, f. 37.

*Vertigo pygmæa*, Férussac, Tab. Moll., p. 64; Turton, Man., p. 103, f. 83; Alder, Mag. Zool. and Bot., II, p. 112; Thompson, Ann. and Mag. Nat. Hist., VI, p. 40; *Vertigo vulgaris*, Leach, Moll., p. 129; *Pupa pygmæa*, Draparnaud, p. 60, pl. 3, f. 30, 31; Forbes, Mal. Mon., p. 12; *Turbo sexdentatus*, young shell, Montagu, p. 337; *Alæa vulgaris*, Jeffreys, Linn. Tr., XVI, p. 359; *Helix Isthima*, Gray, Med. Rep., 1821, p. 239.

Shell oviform, somewhat ventricose, of a glossy, semipellucid, dark reddish-brown colour; spire composed of three or four almost smooth, rather ventricose volutions, the apical one abruptly smaller than that below it; aperture sublunate, provided with five teeth, two of which are situate on the columella, the upper one largest, one on the base of the body or superior portion of the aperture, and two on the outer lip, which, with the inner lip, is thin and externally margined, and a little reflected, with a minute subumbilicus behind the columellar lip; outer lip with a longitudinal rib externally.

Found in almost all parts of Great Britain and Ireland, although not numerous in any one locality; its favourite resort is under stones in dry situations, as far as our experience has gone; but Mr. Thompson, an accurate observer of nature, says, he has found it both in wet and dry situations, from the sea shore to elevated mountain localities. Mr. Forbes met with it among grass at Douglas, Isle of Man.

##### 3. VERTIGO CYLINDRICA, pl. XVIII, f. 38.

*Vertigo cylindrica*, Férussac, Tab. Moll., p. 65; Alder, Mag. Zool. and Bot., II, p. 112; *Pupa obtusa*, Fleming, Brit. An., p. 269; *Pupa muscorum*, var. *a*, Draparnaud, p. 59, pl. 3, f. 36, 37; *Pupa minutissima*, Hartmann, Neue Alpina, p. 220, pl. 2, f. 5; Pfeiffer, III, p. 38, pl. 7, f. 12, 13; Rossmassler, I, p. 84, pl. 2, f. 38.

Shell cylindrical, pellucid, pale yellowish-brown; spire consisting of four convex, acutely and obliquely striated volutions; aperture ovate, slightly margined externally, and destitute of teeth; outer lip rather thin, with a narrow and small umbilicus situate behind the columellar lip. Not quite a line in length.

Found near the Village of Balmenna, Fifeshire, by my friend Mr. Chalmers, surgeon, Kirkcaldy. Its habitat is under stones.

##### 4. VERTIGO SEXDENTATA, pl. XIV, f. 8.

*Vertigo sexdentata*, Turton, Man., p. 103, f. 84; *Vertigo* 4, 5 *dentata*, Studer, Catal.; *Vertigo substriata*, Alder, Cat. Sup. Trans. Newcastle Nat. Hist. Soc., p. 34; Ib., Mag. Zool. and Bot., II, p. 112; Thompson, Ann. and Mag. Nat. Hist., VI, p. 40; *Turbo sexdentatus*, Montagu, Test. Brit., p. 59, f. 8; Brown, Ency. Brit., 6th Ed., VI, p. 457; Turton, Brit. Fau., p. 184; *Helix minuta*, Müller, Verm., II, p. 101.

Shell subcylindrical, ventricose, subconic above, smooth, glossy, of a brownish-yellow horn-colour; spire consisting of four slightly inflated volutions, terminating in a rather obtuse apex; aperture sublunate, a little margined externally; with a thin, reflexed, slightly bent outer lip, which is usually provided with four teeth, two on the upper portion of the aperture, the right one the larger, and two on the columellar lip. Length one line; diameter half its length.

Found in moist situations in Cornwall, Devonshire, Suffolk, at Preston, Lancashire, Newcastle-upon-Tyne, and at Ballantrae, Ayrshire. It is widely diffused throughout Ireland, although rare where it is met with.

##### 5. VERTIGO PALUSTRIS, pl. XVIII, f. 39.

*Vertigo palustris*, Leach, Moll., p. 128, pl. 8, f. 10; Turton, Man., p. 104; Alder, Mag. Zool. and Bot., II, p. 112; Thompson, Ann. and Mag. Nat. Hist., VI, p. 40; *Alæa palustris*, Jeffreys, Linn. Tr., XVI, p. 360; *Pupa antivertigo*, Draparnaud, p. 60, pl. 3, f. 32, 33.

Shell oblong-ovate, subcylindrical, of a deep chestnut, glossy brown-colour; spire subconic, composed of four volutions, slightly inflated, and well defined by the sutural line; body fully longer than the spire; aperture sublunate, with the margins whitish, somewhat sinuated, and provided with eight unequal teeth, three of which are situated on the outer lip, three on the superior portion of the columella, and two on the columellar lip; outer lip with a considerable subsinus near its centre.

This species has sometimes a ninth tubercular tooth. It is somewhat smaller than the *V. sexdentatus*.

The *V. palustris* may be easily distinguished by the three distinct, white teeth, which are situate within the upper and truncate portion of the aperture.

Found in marshy situations, in the neighbourhood of Scarborough; Wimbleton Common; near Twizil House, Northumberland, the seat of J. P. Selby, Esq.; and in Ireland, in many localities throughout the Counties of Down and Antrim, Portarlington, County of Kildare, and Finnoe, County of Tipperary; and at Ballantrae, Ayrshire, Scotland.

6. VERTIGO ALPESTRIS, pl. XVIII, f. 40.

*Vertigo Alpestris*, Férussac, MSS.; Alder, Mag. Zool. and Bot., II, p. 112.

Shell subcylindrical, pellucid, of a pale yellowish horn-colour; spire provided with four somewhat ventricose volutions, gradually tapering to a rather obtuse apex; whole surface covered with longitudinal, minute striæ; aperture semicircular, provided with five teeth, one of which is situate on the superior portion of the aperture, two on the columella, and two on the outer lip, which is slightly reflected. Length one-tenth of an inch; diameter half its length.

Found on old walls, in Northumberland, near Newcastle-upon-Tyne, by Joshua Alder, Esq.

This species differs from *V. pygmaea* in being slightly striated, and somewhat more cylindrical.

*Section II.—Shell fusiform and subcylindrical; spiral convolutions sinistral; aperture externally margined.*

7. VERTIGO PUSILLA, pl. XVIII, f. 41.

*Vertigo pusilla*, Müller, Verm., II, p. 124, No. 320; Alder, Mag. Zool. and Bot., II, p. 112; Jeffreys, Linn. Tr., XVI, p. 361; Pfeiffer, I, p. 72, pl. 3, f. 45, 46; Thompson, Ann. and Mag. Nat. Hist., VI, p. 41; *Vertigo heterostropha*, Leach, Moll., p. 130; *Pupa vertigo*, Draparnaud, p. 61, pl. 3, f. 34, 35; *Jaminea heterostropha*, Risso, IV, p. 91; *Helix vertigo*, Gmelin, Linn. Syst. Nat., I, p. 3654, No. 155; Schröter, Fluss-conchyl., S. 349.

Shell ventricose, ovate, brittle; volutions heterostrophe; body and spire about equal in length; the latter consisting of four somewhat ventricose, nearly transverse volutions, terminating in a rather obtuse apex; aperture subtriangular, oblique, situate on the right side of the shell; provided internally with two teeth on the superior portion of the peristome, two on the columellar lip, and three on the outer lip; peristome narrow, white, a little reflected, with a small umbilicus behind the columellar lip; outer lip furnished with a longitudinal rib internally, and two or three transverse, pale lines, being the reflections of teeth within the aperture, and with a very slight wave; whole shell subpellucid, of a pale chestnut horn-colour, and with longitudinal, very minute striæ, which are only perceptible by the aid of a very strong lens. Length a line; diameter not half its length.

This species has, in some few instances, an eighth tooth situated on the pillar lip.

Inhabits moist woody situations, under stones. It is not a rare, although a local species in Britain. Mr. Thompson, however, says, it is very rare in Ireland, and has been met with in the north-east and west of the island. He par-

ticularises Colin Glen, near Belfast, Portmarnock, and Miltown Malbay.

8. VERTIGO ANGUSTIOR, pl. XIV, f. 9.—First Ed., pl. 41, f. 9.

*Vertigo heterostropha*, Leach, Moll., p. 130; *Vertigo angustior*, Jeffreys, Linn. Tr., XVI, p. 361; Alder, Mag. Zool. and Bot., II, p. 112; Thompson, Ann. and Mag. Nat. Hist., VI, p. 41; *Turbo vertigo*, Montagu, Test. Brit., p. 363, pl. 12, f. 6; Turton, Brit. Fau., p. 186.

Shell ventricose in the middle, and tapering to both extremities; with four heterostrophe volutions, nearly flat on the sides, and terminating in an obtuse apex; body about a third of the entire length of the shell; aperture subtriangular, contracted and angular on its left superior side, rather rounded below; peristome white, and somewhat thickened; outer lip thickened, slightly waved; three white teeth, two of which are on the columella, and one on the outer lip; whole shell covered with fine, obliquely longitudinal striæ, and of an opaque, pale umber-brown colour. Length about half a line.

This is a rare species, and is mentioned by Montagu as obtained from the rejectamenta of the river Avon, Wiltshire; Jeffreys gives its habitat in the rejectamenta of a small stream at Marino, near Swansea; and Thompson obtained it from Mr. W. H. Harvey, who found it at Miltown Malbay, Ireland.

In pointing out the difference between this species and *V. pusilla*, Jeffreys says, that the back being more sunk in some species than in others,—which characterises the growth of toothed land shells,—is sufficient proof that it is not the young of *V. pusilla*.

GENUS 52.—AZECA.—Leach.

Shell subcylindrical, somewhat obtuse; covered with a pellucid, glossy epidermis; aperture pyriform, oblique, curved, and contracted, and terminating in a point above; peristome thick, obtuse, united all round, and toothed internally; columella imperforated.

1. AZECA TRIDENS, pl. XIV, f. 2.—First Ed., pl. 41, f. 2.

*Azeca Matoni*, Leach, Moll., p. 122, pl. 8, f. 8; Turton, Man., p. 68, f. 52; *Pupa Goodalli*, Férussac, Prod., p. 71; Alder, Cat., p. 32; Ib., Mag. Zool. and Bot., II, p. 110; *Azeca Britannica*, Kenyon, Mag. Nat. Hist., II, p. 426, f. n; *Turbo tridens*, Montagu, Test. Brit., p. 338, pl. 11, f. 2; Maton and Rackett, Linn. Tr., VIII, p. 181; Turton's Linné, IV, p. 499; Ib., Brit. Fau., p. 184; Brown, Ency. Brit., 6th Ed., VI, p. 456; *Pupa tridens*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 108; *Helix tridens*, Müller, Verm., II, p. 106, No. 305.

Shell subcylindrical, subpellucid, glabrous, glossy, and of a horn-colour; body not quite so long as the spire, which consists of five or six slightly inflated volutions, terminating in a somewhat obtuse apex, with some minute longitudinal striæ near the suture; aperture pyriform, oblique, a little curved; columella slightly reflexed, with two long and two short teeth alternating; outer lip with a single tooth on its margin. Length a quarter of an inch.

Inhabits close, shaded, woody situations, among moss, under stones, and among decayed leaves, &c.

GENUS 53.—*HELIX*.—Linnaeus.

Shell orbicular, or subglobose, thin; body very large; spire short, and small in proportion to the body; aperture oblique; outer lip reflected, and interrupted by the bulging of the body; columella confluent with the outer lip, and situate on the lower portion of the axis. Some species umbilicated, and others not so; destitute of an operculum.

Some species, however, have the power of forming a calcareous lid, fitting the aperture, to the external edges of which, the animal firmly cements it after retiring to its hybernaculum in winter. This lid has been termed by some authors an epiphragm.

This genus has been divided into several sub-genera.

Sub-Genus 1.—*HELICOGENA*.—Férussac.

*Body volution large; axis solid; destitute of an umbilicus; aperture large.*

1. *HELIX POMATIA*, pl. XVI, f. 12 and 14.—First Ed., pl. 39, f. 12 and 14.

*Helix Pomatia*, Linnaeus, Syst. Nat., p. 1244; Gmelin, Linn. Syst., p. 3627; Lister, Conch., pl. 48, f. 46; Pennant, Brit. Zool., IV, p. 134, pl. 84, f. 128; *Cochlea Pomatia*, Da Costa, Brit. Sh., p. 67, pl. 4, f. 14; Donovan, Brit. Sh., III, pl. 84; Müller, Verm., II, p. 43, No. 243; Turton's Linné, IV, p. 513; Ib., Man., p. 44, pl. 4, f. 34; Ib., Brit. Fau., p. 190; Montagu, Test. Brit., p. 408; Brard, p. 19, pl. 1, f. 5; Draparnaud, Hist. des Moll., p. 87, pl. 5, f. 20, 21, 22; Pfeiffer, I, p. 25, pl. 2, f. 9; Brown, Ency. Brit., 6th Ed., VI, p. 458; Ib., Ency. Edinensis, II, p. 554, pl. 55, f. 5; Alder, Mag. Zool. and Bot., II, p. 106; *Pomatia antiquorum*, Leach, Moll., p. 89.

Shell subglobose, rather strong; body very large, ventricose; spire small, consisting of four somewhat inflated, well divided volutions, terminating in an obtuse apex; whole shell with rather strong, longitudinal striæ, and crossed by very minute, spiral striæ, but not so strong as to produce a reticulated appearance; aperture nearly sublunate; pillar lip white, or very pale rose-colour, considerably spread over the columella; outer lip slightly reflected, and somewhat thickened on the margin; whole shell covered with a thin yellowish-brown epidermis, with three or four broad, transversely spiral, reddish-brown bands beneath it on the body volution, and generally one narrow band on the superior volutions; inside of aperture pale brownish-purple. Length generally about two inches; diameter not quite so much.

The favourite habitats of this species are hedges, woods, and chalky soil. It does not extend further north in England than the midland counties.

Fig. 6 represents the young shell.

The *H. Pomatia* is the largest of the British land shells, and is subject to some variety, both as regards colour and size, and relative proportion of the spire to the body. Reversed specimens have been met with, and others with the convolutions disunited and scalariform.

This shell has, by some authors, been supposed not an aboriginal species, but to have been introduced from Italy about the middle of the sixteenth century by a Mr. Howard, and first turned out at Albury, in Surrey. They seem to have increased

much, and spread themselves over most of the southern counties. We are, however, of opinion that it is a native of England.

This species was a favourite food with the ancient Romans, and is eaten in many parts of Europe at the present time.

2. *HELIX ASPERSA*, pl. XVI, f. 5, 13, and 17.—First Ed., pl. 39, f. 5, 13, and 17.

*Helix aspersa*, Müller, Verm., II, p. 59, No. 253; Gmelin, Linn. Syst., p. 3631, No. 58; Lister, Conch., pl. 49, f. 47; Turton's Linné, IV, p. 515; Montagu, Test. Brit., p. 409; Draparnaud, p. 89, pl. 5, f. 23; Brard, p. 7, pl. 1, f. 1; Brown, Ency. Brit., 6th Ed., VI, p. 460; Fleming, Edin. Ency., VII, p. 81; Ib., Brit. An., p. 263; Turton, Man., p. 52, f. 35; Leach, Moll., p. 82; Rossmassler, pt. 5th, p. 5, pl. 22, f. 294, and small var. *Mazzublii*, p. 5, pl. 22, f. 296; Jeffreys, Linn. Tr., XVI, p. 328; Alder, Mag. Zool. and Bot., II, p. 106; Thompson, Ann. and Mag. Nat. Hist., p. 20; Forbes, Mal. Mon., p. 7; *Helix hortensis*, Pennant, Brit. Zool., IV, p. 136, pl. 84, f. 129; Turton, Brit. Fau., p. 191; Brown, Wernerian Mem., II, p. 527; Donovan, Brit. Sh., IV, pl. 131; *Cochlea vulgaris*, Da Costa, p. 72, pl. 4, f. 1.

Shell subglobose; body large; spire small, consisting of four nearly parallel, rather tumid, but narrow volutions, terminating in a somewhat obtuse apex; aperture semilunar, a little longitudinally lengthened; inner lip white, pretty broadly reflected on the columella; outer lip blunted on the edge, and considerably reflected; whole surface covered with a rather strong, dull, wrinkled epidermis, of a yellowish-brown or olive; with two or three dark, reddish-brown bands of large, interrupted, irregular blotches on the body volution, and two or three on the volutions of the spire; between these are paler, irregular markings. Diameter about an inch and a half.

When the epidermis is removed, the surface of the shell is of a pale white, marked with the fasciæ, which appear more distinct.

Fig. 18 represents the young shell.

This species is subject to considerable variety, both in colour and markings, as well as in the length of its spire.

Fig. 13 is a small variety, the body of which is invested with irregular, longitudinal clouds and blotches, without fasciæ. It has been found with the volutions reversed, and also with the convolutions apart from each other.

This species is universally diffused over the whole of Great Britain and Ireland, and inhabits woody situations, but is more especially met with in gardens, where it makes considerable havoc among the plants.

3. *HELIX NEMORALIS*, pl. XVI, f. 1, 2, 3, 7, 8, 9, 10.—First Ed., pl. 39, f. 1, 2, 3, 7, 8, 9, 10.

*Helix nemoralis*, Müller, Verm., II, p. 46, No. 246; Linné, Syst. Nat., p. 3647; Lister, Conch., pl. 57, f. 54; Montagu, Test. Brit., p. 411; Donovan, Brit. Sh., I, pl. 13; Draparnaud, p. 94, pl. 6, f. 3, 4, 5; Brard, p. 12, pl. 1, f. 2 and 4; Maton and Rackett, Linn. Tr., VIII, p. 206; Lamarck, An. San. Vert., VI, pt. 2nd, p. 81; Fleming, Brit. An., p. 264; Ib., Edin. Ency., VII, p. 81; Brown, Ency. Brit., 1st Ed., VI, p. 460; Ib., Wernerian Mem., II, p. 527; Pfeiffer, I, p. 27, pl. 2, f. 10, 11; Rossmassler, pl. 298, *a, b, var.*; Ib., VIII, p. 26, pl. 36, f. 494; Ib., pl. 10, f. 137; Turton, Brit. Fau., p. 191; Ib., Man.,



p. 33, f. 23; Alder, Mag. Zool. and Bot., II, p. 107; Forbes, Mal. Mon., p. 7; Thompson, Ann. and Mag. Nat. Hist., VI, p. 22; Jeffreys, Linn. Tr., XVI, p. 330; *Tachea nemoralis*, Leach, Moll., p. 84; *Cochlea fasciata*, Da Costa, p. 76, pl. 5, f. 1, 2, 3.

Shell subglobose, thin, subpellucid; body very large; spire small, consisting of three narrow, slightly inflated volutions; aperture transverse, semielliptical; inner lip reflected on the base of the columella, and proceeds in nearly a straight line until it joins the outer lip, which is thickened on the edge, and reflected; both lips invariably of a dark reddish-brown; whole surface covered with a yellow, citron-coloured, flesh-coloured, or olive, thin, pellucid, glossy epidermis, which allows the fasciæ to shine through. Diameter generally about an inch; height three-quarters of an inch.

This species is subject to very great variety in its colours and markings; some are plain citron, yellow, olive, or flesh-coloured, while others are furnished with from one to five dark amber, or blackish-brown bands on the body, variously disposed.

Fig. 4 represents the young shell.

This species is at once distinguished from *H. hortensis* and *hybrida*, from the outer and pillar lips being invariably of a dark brown-colour, while those of *H. hortensis* are always white, and *H. hybrida* of a pale brown, yellowish-brown, or flesh-colour.

I found the beautiful variety f. 8, at West Coates, Edinburgh. It has a very pale rose-coloured outer lip, and a white girdle round its body. It is now in the cabinet of Lady Jardine, at Jardine Hall, Dumfriesshire. Mr. Thompson says, he met with extremely large specimens of the *H. nemoralis* in the south islands of Arran, Ireland.

The *H. nemoralis* is the most common of our land shells, being almost universally diffused throughout Great Britain and Ireland. It locates in woody situations.

4. *HELIX HORTENSIS*, pl. XVI, f. 11, 15, 19.—First Ed., pl. 39, f. 11, 15, 19.

*Helix hortensis*, Lister, Conch., pl. 3, f. 3; Müller, Verm., II, p. 52, No. 447; Gmelin, Syst. Nat., p. 3649, No. 109; Chemnitz, Conch., IX, pl. 133, f. 1199, 1201; Montagu, Test. Brit., p. 412; Draparnaud, p. 95, pl. 6, f. 6; Lamarck, An. San. Vert., VI, pt. 2nd, p. 81; Brard, p. 16, pl. 1, f. 3; Pfeiffer, I, p. 29, pl. 2, f. 12, 13; Fleming, Edin. Ency., VII, p. 81; Ib., Brit. An., p. 264; Rossmassler, I, p. 58, pl. 1, f. 6; Turton, Man., p. 34, pl. 3, f. 24; Alder, Mag. Zool. and Bot., II, p. 106; Jeffreys, Linn. Tr., XVI, p. 330; Forbes, Mal. Mon., p. 8; *Helix nemoralis*, var., Maton and Rackett, Linn. Tr., VIII, p. 206; *Cochlea fasciata*, Da Costa, p. 76, pl. 5, f. 4, 5; *Tachea hortensis*, Leach, Moll., p. 85.

Shell somewhat globose, thin, smooth; body large; spire small, consisting of four, a little inflated, but narrow volutions, terminating in a rather obtuse apex; aperture semielliptical; outer lip white; whole surface covered with a shining epidermis, of yellow, citron, or pale olive, with bands in some specimens, and destitute of them in others.

This species will at once be distinguished from the *H. nemoralis*, by its outer lip being invariably white, and the shell is always nearly a third smaller, and a little more globular. It is subject to great variety in the number and disposition of its bands, which are either black, or very dark reddish-brown.

It inhabits woods, hedges, and shady places, in almost all parts of Britain and Ireland, but is not so common as the *H. nemoralis*.

5. *HELIX HYBRIDA*, pl. XVIII, f. 27, 28.

*Helix hybrida*, Peèret; Leach, MSS.; Gray's Turton's Man., p. 132, pl. 11, f. 150; Thompson, Ann. and Mag. Nat. Hist., VI, p. 21 and 64; *Helix hortensis*, var., Férussac, pl. 31; Alder, Mag. Zool. and Bot., II, p. 106.

Shell semiglobose; body large; spire small, consisting of four moderately inflated volutions, which terminate in an obtuse apex; aperture semielliptical; outer lip of a pale brownish rose-colour, the inner rib being somewhat darker than the lip, which is rather acute at the edge; whole surface of a brownish, or citron-yellow, sometimes banded, but more generally plain; the latter almost always with an indistinct, whitish band, running spirally on the upper margin of the body, and continued on the upper edge of the volutions of the spire.

This species differs in the shape of the aperture, which is more transversely ovate than that of the former two species.

It inhabits hedges and woody situations, in many parts of Britain and Ireland, but is a very local species. Mr. R. Leyland, of Halifax, found this shell of a form and size resembling *H. hortensis*, locating on a small spot on the banks of the canal between Keighley and Bingley, Yorkshire.

6. *HELIX ARBUSTORUM*, pl. XVI, f. 20, 21, 22.—First Ed., pl. 39, f. 20, 21, 22.

*Helix Arbustum*, Linnæus, Syst. Nat., p. 1245; Gmelin, Linn. Syst., p. 3630, No. 53; Müller, Verm., p. 55, No. 248; Lister, Conch., pl. 56, f. 53; Donovan, Brit. Sh., IV, pl. 136; Montagu, Test. Brit., p. 413; Draparnaud, p. 38, pl. 5, f. 18; Lamarck, An. San. Vert., VI, pt. 2nd, p. 180; Brard, p. 65, pl. 2, f. 12; Pfeiffer, I, p. 24, pl. 2, f. 7, 8; Rossmassler, I, p. 57, pl. 1, f. 4; Fleming, Edin. Ency., VII, p. 81; Ib., Brit. An., p. 264; Brown, Ency. Brit., 6th Ed., VI, p. 458; Ib., Wernerian Mem., II, p. 525; Turton, Brit. Fau., p. 190; Ib., Man., p. 35; Alder, Mag. Zool. and Bot., II, p. 106; Forbes, Mal. Mon., p. 7; Thompson, Ann. and Mag. Nat. Hist., VI, p. 23; *Cochlea unifasciata*, Da Costa, p. 75, pl. 17, f. 6; *Arianta Arbustum*, Leach, Moll., p. 86.

Shell subglobose, subpellucid; body large, ventricose; spire rather small, consisting of four inflated volutions, deeply defined by the line of the suture, and terminating in a rather acute apex; aperture sublunate, somewhat longer than wide; outer lip broad, white, and reflexed, with an internal rib; pillar lip broad at its junction with the body, and narrowing suddenly as it descends; surface of a cinerious colour, and in some instances of a pale yellowish hue; beautifully mottled and streaked with lines of dark chocolate-brown, with a single transverse band of brown, investing the body volution, which continues spirally at the base of the volutions of the spire, but gradually becomes imperceptible before reaching the apex.

Fig. 16 represents the young shell.

In some specimens the girdle is wanting, and the shell of a much paler colour, as in fig. 21. Sometimes the blotches and markings are of a beautiful intense chocolate-colour. I have seen specimens entirely divested of blotches or band. It is also liable to some variety in the elevation of the spire.

This is rather a local species, but is to be met with, in Britain and Ireland, from one extreme of the islands to the other.

*Sub-Genus 2.—HELICIGONA.—Férussac.*

*Shell orbicular, depressed, equally convex both above and below; umbilicate; provided with a carina on the centre of the body; aperture transverse; lips united all round.*

7. *HELIX LAPICIDA*, pl. XVII, f. 9, 10, 11.—First Ed., pl. 40, f. 9, 10, 11.

*Helix lapicida*, Linné, Syst. Nat., p. 1241; Gmelin, Linn. Syst., p. 3613, No. 2; Müller, Verm., II, p. 40, No. 240; Donovan, Brit. Sh., II, pl. 29, f. 2; Pennant, Brit. Zool., IV, p. 132, pl. 83, f. 121; Drapernaud, p. 111, pl. 7, f. 35, 36, 37; Brard, p. 53, pl. 2, f. 14, 15; Fleming, Edin. Ency., VII, p. 80; Brown, Ency. Brit., 6th Ed., VI, p. 457; Rossmassler, I, p. 63, pl. 1, f. 11; *Caracolla lapicida*, Lamarck, An. San. Vert., VI, pt. 2nd, p. 99; Fleming, Brit. An., p. 258; Alder, Mag. Zool. and Bot., II, p. 109; Turton, Man., p. 66, pl. 5, f. 51; *Helicigona lapicida*, Férussac, Prod., p. 150, pl. 66,\* f. 6; *Chilotrema lapicida*, Leach, Moll., p. 106; *Helix acuta*, Lister, Conch., pl. 3, f. 4; Da Costa, p. 55, pl. 4, f. 9.

Shell depressed, subdiscoidal, equally convex above and below; body large; spire short, consisting of five much flattened, slightly ventricose volutions, terminating in an obtuse apex; body with a central, sharp-edged carina, which emanates from the margin of the outer lip, and investing the body, continues spirally at the base of the superior volutions, and defines them by a fine thread-like ridge; whole shell with strong, wrinkled, longitudinal striæ, its entire surface presenting a shagreen-like aspect; base provided with a large and deep umbilicus, exhibiting the spiral convolutions; aperture broad, subovate, with a sharp margin; outer lip white, reflexed, and continuous with the pillar lip, which is a little spread on the base of the body, and both lips disunited from the body.

This species is extremely local, and appears not to extend much further north than the centre of England. It has never been found in Ireland, according to the account of Mr. Thompson. Its favourite habitat is limestone rocks and chalky soil.

*Sub-Genus 3.—AMPLEXUS.—Brown.*

*Shell depressed, with an orbicular aperture; peristome continuous and reflexed; epiphragm membranaceous.*

8. *HELIX PULCHELLA*, pl. XIV, f. 76, 77.

*Helix pulchella*, Müller, Verm. Hist., II, p. 30, No. 232; Drapernaud, p. 112, pl. 7, f. 33, 34; Pfeiffer, I, p. 43, pl. 2, f. 32; Brard, p. 56, pl. 2, f. 9; Alder, Mag. Zool. and Bot., II, p. 109; Thompson, Ann. and Mag. Nat. Hist., VI, p. 23; Forbes, Mal. Mon., p. 9; Rossmassler, VII, p. 5, pl. 51, f. 440; Turton, Man., p. 63, pl. 5, f. 49; *Amplexus paludosus*, Brown, Illust. Conch., 1st Ed., pl. 41, f. 76, 77; *Helix pulchella*, Brown, Ency. Brit., 6th Ed., VI, p. 459; *Helix paludosa*, Da Costa, Brit. Conch., p. 59; Walker, Test. Min. Rar., f. 22; Montagu, Test. Brit., p. 440; Maton and Rackett, Linn. Tr., VIII, p. 193, pl. 5, f. 5; Turton, Brit. Fau., p. 188; Brown, Wernerian Mem., II, p. 524; Fleming, Edin. Ency., VII, p. 80; *Turbo paludosus*, Turton, Conch. Dict., p. 228; *Zurama pulchella*, Leach, Moll., p. 108.

Shell smooth, white, subpellucid; spire depressed, consisting of three rounded volutions, well defined by the sutural line, terminating in an obtuse apex, and very little elevated above the body; body large, elegantly rounded, with a wide and deep umbilicus at its base, exhibiting the convolutions of the spire inside; aperture circular, with an opaque, white, flattened, reflected, thickened margin; the lips not quite meeting on the base of the body. Diameter one-tenth of an inch.

This elegant little species is pretty generally diffused throughout Great Britain and Ireland. Its favourite habitat being under stones, in dry situations. It is generally more numerous in dry situations around the coast. It is exceedingly numerous at Carolina Park, near Edinburgh; also on the sand hills at Portmarnock Rabbit Burrow, and Thompson says he found it on the short pastures, in some of the islets, of Lough Strangford, Ireland. It is, however, found in inland situations.

Many authors consider this and the following species merely as varieties; but we have invariably noticed a difference in the animals.

9. *HELIX CRENELLA*, pl. XIV, f. 78, 79.—First Ed., pl. 41, f. 78, 79.

*Helix crenella*, Montagu, Test. Brit., p. 441; *Amplexus crenellus*, Brown, Illust. Conch., 1st Ed., pl. 41, f. 78, 79; *Helix pulchella*, var., Drapernaud, p. 112, pl. 7, f. 30, 31, 32; *Helix costata*, Müller, Verm., p. 31, No. 233; Pfeiffer, I, p. 41, pl. 2, f. 31; Gmelin, Linn. Syst. Nat., I, p. 3633, No. 67; Alten, Erd-und Flusconchyl., S. 60, pl. 6, f. 11; Gärtner, Couchyl. der Wetterau, S. 26; Rossmassler, VII, p. 5, pl. 31, f. 439; Fleming, Brit. An., p. 263; *Helix pulchella*, var., Alder, Mag. Zool. and Bot., II, p. 109; Forbes, Mal. Mon., p. 9; *Turbo helicinus*, Lightfoot, Phil. Trans., 1776, pl. 3, f. 1 to 4.

Shell milk-white, subopaque; spire depressed, consisting of three well defined, rounded volutions, and terminating in an acute apex, which is but little elevated above the body volution, and beautifully rounded; its base provided with a large and deep umbilicus, exposing in its cavity the inner sides of the volutions of the spire; aperture circular; the outer and pillar lips continuous, smooth, white, opaque, and reflected, but a little separated on the columella; whole surface covered by numerous, strong, regular, longitudinal, concentric ribs. Diameter one-tenth of an inch. Some specimens have a yellowish-brown epidermis.

Some authors affirm that this species is always found in damp situations, while the habitat of *H. pulchella* is constantly in dry localities. We have met with both shells plentifully in Carolina Park, near Edinburgh, and also at Portmarnock, Ireland. In the former locality, however, we always met with the two species in separate situations.

This shell is as widely spread as the *H. pulchella*, both in England and Ireland, and in the same kind of habitat. In the North of Ireland, Mr. Thompson says this species is more common on dry sea banks than the *H. pulchella*. Forbes has found the *H. crenella* on walls in the Isle of Man, and I have met with it in a similar locality, in the King's Park, at Edinburgh. I have likewise observed both specimens in damp situations, but very rarely.

Sub-Genus 4.—*HELICELLA*.—Férussac.

Shell depressed; base of the body provided with a large umbilicus.

10. *HELIX CANTIANA*, pl. XVII, f. 15, 16, 17.—First Ed., pl. 40, f. 15, 16, 17.

*Helix Cantiana*, Montagu, Test. Brit., p. 422, pl. 23, f. 1; Maton and Rackett, Linn. Tr., VIII, p. 197; Turton, Brit. Fau., p. 189; Brown, Ency. Brit., 6th Ed., VI, p. 457; Fleming, Edin. Ency., VII, p. 79; Ib., Brit. An., p. 261; *Teba Cantiana*, Leach, Moll., p. 94; *Helix Carthusiana*, Draparnaud, p. 102, pl. 6, f. 33; Turton, Man., p. 36, pl. 3, f. 26; Alder, Mag. Zool. and Bot., II, p. 106; Brard, p. 24, pl. 1, f. 6; Férussac, Prod., p. 43; Rossmassler, V, VI, p. 36, pl. 27, f. 364; *Helix pallida*, Donovan, Brit. Sh., V, pl. 157, f. 2; *Helix circinnata*, Rossmassler, I, p. 64, pl. 1, f. 12.

Shell subpellucid, thin, generally of a yellowish-white, but sometimes lead-coloured; body large, tumid, with an obscure central band; the base and aperture of a rufous colour; spire small, subdepressed, consisting of five moderately rounded volutions; aperture semielliptical, its length and width being nearly equal; outer lip thin, but not reflected; internal rib of a pale rose-colour, or white; whole surface covered with minute, irregular, longitudinal striæ; umbilicus rather small. Diameter three-quarters of an inch; height about half an inch.

Young shells are very pale in the colour, and with the epidermis slightly hispid. The adult bears some resemblance to *H. rufescens*, but may be distinguished by its greater convexity, superior size, in the striæ less regular and strong, in being devoid of the subcarinated band round the body, and in the umbilicus being considerably less in proportion to its size.

This species frequents the chalk districts of Kent, and is an extremely local shell.

11. *HELIX CARTHUSIANA*, pl. XVII, f. 49, 50, 51.—First Ed., pl. 40, f. 49, 50, 51.

*Helix Carthusiana*, Müller, Verm., p. 15; *Helix Carthusianella*, Draparnaud, p. 101, pl. 6, f. 31, 32; Alder, Mag. Zool. and Bot., II, p. 106; Brard, p. 24, pl. 1, f. 7; Turton, Man., p. 37, f. 27; *Helix Gibsii*, Leach, in Brown, Illust. Conch., 1st Ed.; Férussac, Journ. de Phys., XC, p. 300; *Helix Zenobia bimarginata*, Gray, Med. Rep., 1821; *Helix rufilabris*, Jeffreys, Linn. Tr., XVI, p. 509; *Teba Carthusianella*, Leach, Moll., p. 95, pl. 8, f. 4, 5, 6.

Shell subdepressed, subpellucid, glabrous, of a grayish-brown; body large, inflated on the sides; spire very small, but little elevated, consisting of three slightly defined volutions, terminating in a subacute apex; aperture sublunate; outer lip thin on the margin, with a milk-white, transverse, rather broad band on the outside; base provided with a very small umbilicus, which is partly covered by the columellar lip.

The *H. Carthusianella* is subject to some variety, in size, thickness, and also in the consistence of the shell. One variety is smaller, and more convex.

This species inhabits the chalk districts of Sussex and Kent, among short grass; and is also common on the coast betwixt Dover and Brighton.

12. *HELIX RUFESCENS*, pl. XVII, f. 47 and 53.—First Ed., pl. 40, f. 47 and 53.

*Helix rufescens*, Pennant, Brit. Zool., IV, p. 134, pl. 85, f. 127; Montagu, Test. Brit., p. 420, pl. 23, f. 2; Turton, Brit. Fau., p. 189; Ib., Man., p. 37, f. 28; Fleming, Edin. Ency., VII, p. 79; Ib., Brit. An., p. 261; Brown, Ency. Brit., 6th Ed., VI, p. 457; Ib., Wernerian Mem., II, p. 525; Thompson, Ann. and Mag. Nat. Hist., VI, p. 28; Jeffreys, Linn. Tr., XIII, p. 337; Férussac, Prod., p. 44; Donovan, Brit. Sh., V, pl. 157, f. 1; Maton and Rackett, Linn. Tr., VIII, p. 196; *Helix hispidula*, Donovan, V, pl. 151, f. 1; *Helix glabella*, Draparnaud, p. 102, pl. 7, f. 6; Pfeiffer, p. 34, pl. 2, f. 16; Alder, Mag. Zool. and Bot., II, p. 107; *Teba rufescens*, Leach, Moll., p. 96; *Cochlea rufescens*, Da Costa, p. 80, pl. 4, f. 6.

Shell subdepressed, subopaque, rufous brown; body large; spire small, consisting of five slightly elevated and moderately inflated volutions, well defined by the sutural line; centre of the body volution encompassed by a slight subcarinated girdle, of a paler colour than the rest of the shell, but which does not extend to the volutions of the spire; aperture semilunar, somewhat longer than broad; outer lip thin, slightly reflected at the lower angle; whole surface covered with longitudinal, wrinkled striæ; umbilicus large and deep. Diameter frequently nearly three-quarters of an inch. Its general dimensions smaller.

The young of this shell is destitute of hairs.

This species is liable to some variations in colour.

13. *HELIX LIMBATA*, pl. XVIII, f. 29, 30.

*Helix limbata*, Draparnaud, p. 100, pl. 6, f. 29; Férussac, Prod., p. 43; Michaud, Compl., p. 24; Rossmassler, Icon., V, p. 35, pl. 26, f. 362; Alder, Mag. Zool. and Bot., II, p. 106.

Shell suborbicular, of a white or reddish colour; body large, with an opaque, slight carina round its centre; spire about a third of the length of the body, consisting of four somewhat narrow, slightly inflated and subdepressed volutions, terminating in a rather obtuse apex; aperture sublunate, very oblique, and slightly narrowed in the centre of the outer lip, which is thin, plain, slightly reflexed, and margined with white; pillar lip a little reflexed over the umbilicus, which is rather small and narrow; whole surface very finely striated. Length nearly half an inch; diameter upwards of half an inch.

This species is subject to considerably variety in colour; being sometimes reddish-brown, and at others of a clear white.

Discovered by Mr. G. B. Sowerby on the New North Road to Barnet, near Hampstead, in a hedge row, and attached to brambles. The *H. limbata* is a native of France, Switzerland, and Germany, and has in all probability been an introduced species, as the above is the only locality where it has hitherto been noticed in Britain.

14. *HELIX FULVA*, pl. XVII, f. 2.—First Ed., pl. 40, f. 2.

*Helix fulva*, Müller, Verm. Hist., II, p. 56, No. 249; Draparnaud, p. 81, pl. 7, f. 12, 13; Pfeiffer, I, p. 23, pl. 2, f. 2; Turton, Man., p. 61, f. 47; Alder, Mag. Zool. and Bot., II, p. 108; Thompson, Ann. and Mag. Nat. Hist., VI, p. 25; *Helix trochiformis*, Montagu, Test. Brit., p. 427, pl. 11, f. 9; Turton, Brit. Fau., p. 189; Fleming, Edin. Ency., VII, p. 80; Maton and Rackett, Linn. Tr., VIII, p. 200; Jeffreys, Linn. Tr., XVI, p. 331; *Helix Trochilus*, Fleming, Brit. An., p. 260; Brown, Ency. Brit., 6th Ed., VI, p. 458; *Teba fulva*, Leach, Moll., p. 99; *Helix nitidula*, V. Alten, S. 53, pl. 4, f. 8.



*Variety 1. Shell depressed, and equally convex both above and below.*

*Helix Mortonii*, Jeffreys, Linn. Tr., XVI, p. 332.

*Variety 2. Smaller, and of a darker colour.*

*Helix Alderi*, Alder, Mag. Zool. and Bot., II, p. 108.

Shell trochiform, thin, smooth, glossy, pellucid, of a dark-brownish horn-colour, sometimes inclining to a reddish hue; body large, ventricose; spire small, much produced, and having five inflated volutions, deeply divided by the sutural line, terminating in a rather obtuse apex; base rounded, and provided with a very small umbilicus, which is hardly perceptible in the young shell; aperture subluniformal, transversely compressed, its length and breadth being equal; outer lip thin; pillar lip slightly reflected over the umbilicus. Diameter about one-eighth of an inch.

The small variety of this shell, noticed by Joshua Alder, Esq., of Newcastle, has very fine concentric striæ on its base, which is only visible by the aid of a strong lens. This variety is only one-tenth of an inch in diameter.

Inhabits woody and shaded situations, under stones, on decayed timber, and under leaves. Montagu mentions it as a Devonshire and Wiltshire shell. It has also been found in the North of England; and Thompson says it is generally distributed over Ireland, from the sea shore to mountain localities. At Wolfhill, he found thirty specimens congregated under one stone.

15. *HELIX FUSCA*, pl. XVII, f. 25, 26.—First Ed., pl. 40, f. 25, 26.

*Helix fusca*, Montagu, Test. Brit., p. 424, pl. 13, f. 1; Brown, Ency. Brit., p. 460; Fleming, Edin. Ency., VII, p. 81; Ib., Brit. An., p. 264; Maton and Rackett, Linn. Tr., VIII, p. 209; Jeffreys, Linn. Tr., XVI, p. 329, 394, and 507; Alder, Mag. Zool. and Bot., II, p. 107; Turton, Man., p. 53, f. 36; Ib., Conch. Dict., p. 946; Ib., Brit. Fau., p. 191; Thompson, Ann. and Mag. Nat. Hist., VI, p. 24; *Helix Zenobia corrugata*, Gray, Med. Rep., 1821, p. 239.

Shell thin, pellucid, of a rufous horn-colour; body large, considerably inflated in the centre; spire small, subdepressed, consisting of four or five very narrow volutions; aperture semilunar, its breadth and length nearly equal; outer lip very thin, but not reflected; columellar lip a little reflected over the very minute perforation, instead of an umbilicus. Diameter about three-eighths of an inch; its height seldom exceeding a quarter of an inch.

Found in woody, damp situations, and is a very local and scarce species in England. It has been met with generally throughout Ireland, except in the King's County. My friend T. W. Warren, Esq., of Dublin, met with it at Kilruddery, Wicklow; by Edward Wallen, Esq., at Altadawan, Tyrone; by Miss Mary Ball, of Dublin, at Youngrove, near Youghal; by the Rev. Benjamin J. Clarke at Monivea, Galway; by W. H. Harvey, Esq., near Limerick; and in glens in the Belfast mountains by William Thompson, Esq., of Belfast.

16. *HELIX LAMELLATA*, pl. XVIII, f. 47.

*Helix lamellata*, Jeffreys, Linn. Tr., XVI, p. 333; Thompson, Ann. and Mag. Nat. Hist., VI, p. 26; *Helix Scarburgensis*, Turton, Man., p. 62, f. 48.

Shell trochiform, semipellucid, of a pale grayish horn-colour; body somewhat longer than the spire, which consists of five

gradually decreasing, well defined volutions, terminating in a somewhat obtuse apex; outer lip thin; inner lip slightly reflected over the umbilicus; aperture sublunate, wider than long; base of the body tumid, generally of a paler colour than the superior portion of the shell, and provided with a small, but deep umbilicus; whole surface covered with an epidermis, which rises into a series of longitudinal, lamellated processes. Diameter about the tenth of an inch.

This species has somewhat the appearance of *H. aculeata*, but may be distinguished by the lamellar epidermis not rising into spinous processes, and in being more numerous; the spire also is pyramidal, and not conical, as in *H. aculeata*; the aperture in the latter species is more elliptical and produced, than in *H. lamellata*, and it is destitute of the internal marginal rib. Mr. Thompson says, that both the animal and shell are of a paler colour in the young, than in the adult state.

This interesting addition to our Fauna we owe to Mr. Bean, of Scarborough.

It inhabits woody situations in Yorkshire and Northumberland. It has also been found to be widely distributed in Ireland, under decayed leaves of trees, in moss, and shady and moist situations. Mr. Thompson first met with it in the Glen at Holywood House, Downshire, and afterwards in many other parts of the county, and also in Antrim; it occurs in the Glen of Downs, Wicklow, La Bergerie, Queen's County, by the Rev. J. B. Clarke; and at Dunscombe Wood and Ballinhassig Glen, near Cork, by the Rev. T. Hincks, of Cork.

17. *HELIX ACULEATA*, pl. XVII, f. 1.—First Ed., pl. 40, f. 1.

*Helix aculeata*, Müller, Verm., II, p. 81; Draparnaud, p. 82, pl. 7, f. 10, 11; Alder, Mag. Zool. and Bot., II, p. 109; Ib., Trans. Newcastle Nat. Hist. Soc., I, p. 36; Thompson, Ann. and Mag. Nat. Hist., VI, p. 25; Fleming, Brit. An., p. 262; Gmelin, Linn. Syst., p. 3638; Brown, Ency. Brit., 6th Ed., VI, p. 458; *Helix spinulosa*, Lightfoot, Phil. Trans., LXXVI, p. 166, pl. 2, f. 1 to 5; Montagu, Test. Brit., p. 424, pl. 11, f. 10; Fleming, Edin. Ency., VII, p. 80; Turton, Man., p. 43, f. 33; Ib., Brit. Fau., p. 190; Maton and Rackett, Linn. Tr., VIII, p. 201; *Teba spinulosa*, Leach, Moll., p. 100.

Shell conical, globose, thin, subpellucid, of a brownish horn-colour; body large; spire small, acute, consisting of four deeply divided, inflated volutions; aperture semilunated, a little longer than wide, internally provided with a white rib, with a rather large and deep umbilicus; whole surface covered with an epidermis, which rises into numerous, regular, somewhat longitudinally oblique foliations, or striæ, which rise into fine, flexible, hair-like, spinous processes. Length and diameter about the tenth of an inch.

This is rather a local species, inhabiting woods and shady places, under stones and leaves, &c. It has been found near Bulstrode, Buckinghamshire; Lackham, Wiltshire; Kingsbridge, Devonshire; Spetisbury, Dorsetshire; at Dovedale, Derbyshire; and the Dean, at Twizil, Northumberland; the Lomond Hills, Fifeshire; in the woods at Hopetoun, Linlithgowshire; and in Ireland it is pretty generally diffused. It was met with plentifully at Portmarnock, County of Dublin, by my friend T. W. Warren, Esq., of Dublin; at Ben Bulbin, County of Sligo, by William Thompson, Esq., of Belfast; and at Miltown Malbay, by W. H. Harvey, Esq.

18. *HELIX GRANULATA*, pl. XVII, f. 8 and 13.—First Ed., pl. 40, f. 8 and 13.

*Helix granulata*, Alder, Mag. Zool. and Bot., II, p. 107; Forbes, Mal. Mon., p. 8; Thompson, Ann. and Mag. Nat. Hist., VI, p. 26; *Helix hispida*, Montagu, Test. Brit., p. 423; Maton and Rackett, Linn. Tr., VIII, p. 198; Fleming, Edin. Ency., VII, p. 79; Ib., Brit. An., p. 261; Brown, Ency. Brit., 6th Ed., VI, p. 458; Ib., Wernerian Mem., II, p. 225; Turton, Brit. Fau., p. 189; *Helix sericea*, Turton, Man., p. 38; Jeffreys, Linn. Tr., XVI, p. 333 and 507; *Helix globularis*, Jeffreys, Linn. Tr., XVI, p. 507; *Teba hispida*, Leach, Moll., p. 98.

Shell subglobose, subpellucid, thin, fragile, and of a pale yellowish horn-colour; body ventricose, about a third longer than the spire, which consists of four rather tumid volutions, well defined by the sutural line, and terminating in a slightly obtuse apex; base well rounded, and provided with a very small umbilicus; aperture semilunar, its width exceeding its length; outer lip very thin, with a slight internal rib, apparent in the adult condition only; pillar lip slightly reflected, at the angle, over the umbilicus; whole surface covered with fine, close-set, short, downy, whitish hairs, which, when removed, exhibits the minutely granulated, shagreen-like, glossy exterior of the shell. Diameter a quarter of an inch.

This species is pretty generally spread over Great Britain. It is found in Wiltshire, Devonshire, Lincolnshire, Cornwall, Dorsetshire, and Northumberland; and is plentiful among nettles in the King's Park, at Edinburgh. In Ireland, I met with it at Naas, County of Kildare, and near Downpatrick; Mr. W. H. Harvey found it about Limerick and Ballitore; and Mr. Humphreys found it at Belgrove, east of Cork. Professor Forbes says it is common on the Isle of Man. Its habitat is in moist, woody situations.

20. *HELIX REVELATA*, pl. XVII, f. 3, 4, 5.—First Ed., pl. 40, f. 3, 4, 5.

*Helix revelata*, Férussac, Prod., p. 44; Michel, Compl., p. 27, pl. 15, f. 6, 7, 8; Deshayes, Lam. An. Sans. Vert., VIII, p. 83.

Shell subglobose, thin, subpellucid, of a pale yellowish-green colour; body large; spire small, consisting of three moderately raised volutions, ending in a subobtuse apex; base not much raised, and provided with a narrow umbilicus; aperture sublunate, very oblique, and rather rounded; outer lip thin, and very slightly reflexed; pillar lip a little reflected over the umbilicus, and shewing only the base of the penultimate volution; surface covered with a few scattered grayish hairs, which, when removed, reveal a slightly wrinkled exterior. Diameter about a quarter of an inch.

Discovered by me on the Lomond Hills, Fifeshire, Scotland, and named *Vitrina membranacea* in the first edition of this work; it has since been met with by Professor Forbes in shady places, among nettles, near Doherty's Monument, in Guernsey, where it is not uncommon.

21. *HELIX SERICEA*, pl. XVIII, f. 43, 44.

*Helix sericea*, Müller, Verm. Hist., II, p. 60, No. 258; Draper-  
naud, p. 103, pl. 7, f. 16, 17; Pfeiffer, I, p. 34, pl. 2, f. 17; Kenyon, Mag. Nat. Hist., I, p. 427, f. 3; Alder, Mag. Zool. and Bot., II, p. 107; Thompson, Ann. and Mag. Nat. Hist., VI, p. 26; Rossmassler, Icon., VII, p. 2, pl. 31, f. 428, 429.

Shell subglobose, thin, diaphanous, subpellucid, and of a

reddish horn-colour, with a nearly obsolete, spiral girdle surrounding the body volutions, producing a somewhat carinated aspect; body subdepressed, very tumid on the sides, considerably longer than the spire, which consists of four moderately rounded, gradually tapering volutions, terminating in a subobtuse apex; base not very prominent, with a rather small umbilicus; aperture sublunate, its length and width nearly equal; outer lip thin, destitute of an internal rib; pillar lip a little reflected over the umbilicus; whole shell covered with a brown epidermis, beset with remote, rather elongated, recurved, soft hairs, which, when removed, exposes a slightly wrinkled exterior. Diameter about a quarter of an inch.

Varieties are said to be found nearly white.

This species differs from *H. hispida*, in being thinner and more globular in form, and in the umbilicus being smaller. It will be known from the *H. granulata*, by being wrinkled, instead of having granulations.

Inhabits woody situations.

Mr. Alder, who first introduced this shell on the faith of Baron de Férussac, gives no locality for it. Mr. Thompson gives it as an Irish specimen, from Lagan, near Belfast, but considers it as merely a variety of *H. hispida*.

22. *HELIX HISPIDA*, pl. XVII, f. 40 and 46.—First Ed., pl. 40, f. 40 and 46.

*Helix hispida*, Müller, Verm., II, p. 73, No. 268; Draper-  
naud, p. 103, pl. 7, f. 20, 21, 22; Gmelin, Linn. Syst., I, p. 3625, No. 42; Pfeiffer, I, p. 36, pl. 2, f. 20; Brard, p. 27, pl. 2, f. 1; Turton, Man., p. 57, f. 41; Jeffreys, Linn. Tr., XIII, p. 338; Lamarck, An. San. Vert., VI, pt. 2nd, p. 92, No. 100; Rossmassler, VII, p. 2, pl. 31, f. 226, 227; Alder, Mag. Zool. and Bot., II, p. 107; Thompson, Ann. and Mag. Nat. Hist., VI, p. 27.

Shell subdepressed, subdiaphanous, of a brownish horn-colour, frequently of a dark reddish-brown; body large, convex on the sides, with a pale, central, transverse, subcarinated zone; spire small, subdepressed, consisting of three rather depressed and not deeply defined volutions, with a blunt apex; base not much produced, and with a deep, moderately-sized umbilicus; aperture moderate, subluniformal, somewhat rounded; outer lip even, with an internal rib; pillar lip not reflected; whole exterior covered with fine, close-set, bristly hairs, which are very caducous, when these are removed the surface is slightly striated. Diameter a quarter of an inch; its length being hardly so much.

This species is always hairy, and very flat above, even in the youngest condition.

Not uncommon in many parts of Great Britain, and is widely spread over Ireland. It is found under stones, decayed trees, leaves, &c., both in dry and moist situations. Mr. Thompson mentions a well marked variety, which he found in the North of Ireland, where it is the most common form. It is larger, more depressed, and with a more ample umbilicus, than the ordinary form.

23. *HELIX CONCINNA*, pl. XVIII, f. 45, 46.

*Helix concinna*, Jeffreys, Linn. Tr., XIII, p. 337; Alder, Mag. Zool. and Bot., II, p. 107; Thompson, Ann. and Mag. Nat. Hist., VI, p. 27; Forbes, Mal. Mon., p. 8; *Helix depilata*, Alder, Mag. Zool. and Bot., II, p. 107; *Helix circinnata*, Férussac, Prod., No. 268.

Shell subdepressed, reddish-brown; body volution large, with a slight carina round its centre; spire small, abruptly tapering, consisting of four well defined, but depressed volutions, terminating in a subacute apex; aperture sublunate and roundish, its width somewhat more than its length; outer lip thin, even, with an internal rib; pillar lip with a slight reflection over the umbilicus, which is broad; exterior covered with rather remote, scattered, irregular, deciduous, whitish hairs, which are more plentiful near the suture of the spire, and around the umbilicus, beneath which it is concentrically grooved. Diameter upwards of three-eighths of an inch; length not quite so much.

This species is nearly allied to *H. hispida*, but somewhat larger, with a wider umbilicus, the hairs considerably more distant, and is generally more convex.

The *H. concinna* is widely spread all over England and Ireland. Its habitat is in dry situations, under stones and among nettles.

24. *HELIX DEPILATA*, pl. XVIII, f. 47, 48.

*Helix depilata*, Pfeiffer, I, p. 35, pl. 2, f. 18; Alder, Mag. Zool. and Bot., II, p. 107.

Shell subglobose, depressed, concentrically grooved, and of a pale yellowish-brown; body very large; spire small, consisting of four volutions, terminating in a sharp point; base rather flat, provided with a pretty large umbilicus; aperture lunate; outer lip white, and thickened. Diameter not three-eighths of an inch; length a quarter of an inch.

This species is bald in all its stages from the young to the adult condition. It is somewhat like *H. concinna*, but is considerably smaller.

Inhabits moist situations, under hedges, &c.

#### Sub-Genus 5.—*HELIOMANES*.—Férussac.

*Subglobose, umbilicated; peristome not reflected; epidermis thin; epiphragm membranaceous.*

25. *HELIX VIRGATA*, pl. XVII, f. 42, 43, 44.—First Ed., pl. 40, f. 42, 43, 44.

*Helix virgata*, Montagu, Test. Brit., p. 415, pl. 24, f. 1; Fleming, Edin. Ency., VII, p. 79; Ib., Brit. An., p. 261; Brown, Wernerian Mem., II, p. 524; Maton and Rackett, Linn. Tr., VIII, p. 195; Turton, Man., p. 40, f. 31; Thompson, Ann. and Mag. Nat. Hist., VI, p. 28; *Helix zonaria*, Pennant, Brit. Zool., IV, p. 137, pl. 85, f. 133; Donovan, Brit. Sh., pl. 65; *Helix variabilis*, Draparnaud, p. 84, pl. 5, f. 11, 12; Lamarck, An. San. Vert., VI, pt. 2nd, p. 83; Rossmassler, Icon., VI, p. 31, pl. 26, f. 356, *a to f*; Férussac, Journ. Phys., p. 297; Alder, Mag. Zool. and Bot., II, p. 109; *Helix striata*, Brard, p. 36, pl. 2, f. 5, 6; *Teba virgata*, Leach, Moll., p. 93.

Shell subglobose, subpellucid; body large; spire small, consisting of five considerably inflated volutions, deeply defined by the sutural line; aperture sublunated, longer than wide, of a pale purplish-brown internally, inside with a narrow, white, thread-like elevation; outer lip thin, but not reflected; pillar lip slightly reflexed over the umbilicus; whole surface white, tinged with pale pink, usually with a dark purplish-brown zone round the centre of the body, continuing spirally at the base of the volutions of the spire, until it reaches the apex; base of the body generally with three or four concentric lines of the same dark colour; these in some instances are confluent,

the intervening colourless parts appearing in spots; others are provided with two or three broader circular bands at the base, none of which, however, run close to the umbilicus, which is only of moderate size, but deep. Ordinary diameter three-eighths of an inch; but is frequently met with three-quarters of an inch.

This shell is subject to great variety in colour, and also in the number and disposition of its bands and markings; one of which is of a dark chocolate-brown, with a white central band round the body; sometimes it is pure white, and destitute of bands, while in other white specimens the zones are quite distinct and transparent; the apex for the most part is black. A beautiful variety is of a pale flesh-colour, with a white central band.

We met with a *lusus* of this species (pl. XVII, f. 41 and 45) at Farbane, King's County, Ireland, with the volutions of the spire subscalariform, and the whole surface of a uniform reddish-brown colour, with a white band round the centre of the body, and continuing round the base of the volutions of the spire; and the apical volutions rather obtuse.

The *H. virgata* is a local species both in England and Ireland, but most plentiful where it occurs. It does not appear to extend further north than the central counties of England. In Ireland, I met with it plentifully in the King's County, Queen's County, and Kildare. At Ballinakill, I found some very large and beautiful specimens. My esteemed friend T. W. Warren, Esq., of Dublin, possesses the most beautiful and varied series of this shell, which any collection can boast of. The favourite habitat of this species is dry, sandy situations.

It has been remarked, that this shell never associates with the *H. eriectorum*.

26. *HELIX CAPERATA*, pl. XVII, f. 37 and 39.

*Helix caperata*, Montagu, Test. Brit., p. 430, pl. 11, f. 11; Turton, Brit. Fau., p. 188; Ib., Man., p. 42, f. 32; Maton and Rackett, Linn. Tr., VIII, p. 196; Brown, Wernerian Mem., II, p. 536; Fleming, Edin. Ency., VII, p. 80; Ib., Brit. An., p. 262; Jeffreys, Linn. Tr., XIII, p. 334; Forbes, Mal. Mon., p. 8; Thompson, Ann. and Mag. Nat. Hist., VI, p. 29; *Helix striata*, Draparnaud, p. 106, pl. 6, f. 18 to 21; Lamarck, An. San. Vert., VI, pt. 2nd, p. 93; Rossmassler, V, p. 28, pl. 26, f. 354; *Helix intersecta*, Brard, p. 39, pl. 2, f. 7.

Shell subpellucid, subdepressed; spire with five flattened volutions, and terminating in a somewhat obtuse, nearly black apex; body provided with a subcarinated belt round its centre, the base with a large and deep umbilicus; aperture semilunar; outer and inner lips thin, the latter not reflected over the umbilicus; generally of an ash-colour, or yellowish, and entirely covered with strong, regular, close-set, longitudinal striæ; superior portion of the body usually provided with a brown spiral band, which is continuous on the base of the volutions of the spire; base generally with several concentric, dark brown bands, which are interrupted at intervals, producing a catinated, or spotted appearance; sometimes the fasciæ are confluent, and spotted with white. Diameter at the base generally about three-eighths of an inch; height about a quarter.

This species is liable to considerable variation in colour and markings, and even in size. Some are of a brownish ash-colour, gray, or cream-colour; others are dark brown, with a white, subcarinated band round the body; but most of them have a



faint indication of spiral bands. Colonel Montagu observes, that "in shape it is a medium between *Helix virgata* and *radiata*; it is not so produced as the former, nor so flat as the latter; in the bands, or fasciæ, at the base it somewhat resembles the first, and in being strongly striated is like the last."

This is a local species, and has been found in Wiltshire, South Devonshire, Cornwall, and Cumberland. It is plentiful in the neighbourhood of the Old Quarry, back of and also at the base of the cliffs in front of Salisbury Crags, at Edinburgh. I found it plentifully on mud walls at Naas, County of Kildare. Thompson says, it seems to prevail only in the "southern half of the island, and is plentiful where it does occur." He particularises Glanmire, near Cork, by W. H. Harvey, Esq.; Kilkee Castle, near Ballitore, County of Kildare, La Bergerie, Queen's County, by Mr. Patterson, of Belfast; and at Kingstown, near Dublin, by T. W. Warren, Esq.

27. *HELIX PISANA*, pl. XVII, f. 27, 29, 33, 35, 38, and 58.—First Ed., pl. 40, f. 27, 29, 33, 35, 38, and 58.

*Helix pisana*, Müller, Verm., II, p. 60, No. 255; Lamarck, An. San. Vert., pt. 2nd, p. 82; Rossmassler, V, VI, p. 34, pl. 26, f. 259, *a, b, c, d*; Brown, Ency. Brit., 6th Ed., VI, p. 459; Fleming, Brit. An., p. 259; Alder, Mag. Zool. and Bot., II, p. 109; Thompson, Ann. and Mag. Nat. Hist., VI, p. 28; *Helix cingenda*, Montagu, Test. Brit., p. 418, pl. 24, f. 4; Maton and Rackett, Linn. Tr., VIII, p. 195, pl. 5, f. 6; Turton, Brit. Fau., p. 188; Ib., Man., p. 39, f. 30; Jeffreys, Linn. Tr., XIII, p. 333; Fleming, Edin. Ency., VII, p. 79; Phillippi, Enum. Moll. Sic., p. 131, No. 22; *Helix albana*, Müller, Verm., II, p. 25, No. 226; *Helix zonaria*, Pennant, Brit. Zool., IV, p. 137, pl. 85, f. 133; *Helix rhodostoma*, Draparnaud, p. 86, pl. 5, f. 13, 14, 15; *Teba cingenda*, Leach, Moll., p. 92.

Shell subpellucid, subglobose; body large; spire small, consisting of four volutions, the three superior ones but little elevated above the others, and terminating in an obtuse, depressed apex; body volution somewhat angulated, or flattened above; base well rounded, with a narrow and deep umbilicus; aperture semilunar, somewhat longer than wide; outer lip thin, as well as the pillar lip, which is abruptly reflected half over the umbilicus; whole surface of a cream-white, or yellowish, with several spiral bands of chestnut, or purplish-brown; sometimes these are interrupted, forming short, longitudinal, streaks or dots; base generally provided with one broad concentric band, at a little distance from the umbilicus, but with two in some specimens; near the aperture the colour is more or less roseate; apex defined by a black spiral line. Diameter generally three-quarters of an inch; length half an inch. But is subject to a considerable difference in size.

Fig. 32 and 36, the young shell.

A variety of this species is met with quite plain, and in some specimens with only a few faint zones on the body.

This species bears a considerable similitude to *H. virgata*, but it is larger and broader, with a more depressed apex.

This is one of the rarest, and most beautiful of our land shells; Montagu found it on the south of Tenby, close to the sea shore, and also on the west of that place. The Rev. Thos. Rackett found it at St. Ives, Cornwall, and was first discovered in Ireland, near Balbriggan, on the County of Meath side of the stream that divides that county from Dublin, by my friend M. J. O'Kelly, Esq., of Rochestown House, County of Dublin;

Thos. Wm. Warren, Esq., of Dublin, afterwards found it in the same locality. Mr. Humphreys detected it on the north side of the river Boyne, near Drogheda.

28. *HELIX ERICITORUM*, pl. XVII, f. 21, 23, and 34.—First Ed., pl. 40, f. 21, 23, and 34.

*Helix ericitorum*, Müller, Verm., II, p. 233, No. 236; Lamarck, An. San. Vert., VI, pt. 2nd, p. 84; Montagu, Test. Brit., p. 436; Fleming, Edin. Ency., VII, p. 80; Ib., Brit. An., p. 260; Brown, Ency. Brit., 6th Ed., p. 459; Ib., Wernerian Mem., II, p. 524; Donovan, Brit. Sh., pl. 151, f. 2; Maton and Rackett, Linn. Tr. VIII, p. 194; Alder, Mag. Zool. and Bot., II, p. 109; Rossmassler, I, p. 67, pl. 1, f. 17; Forbes, Mal. Mon., p. 8; Thompson, Ann. and Mag. Nat. Hist., VI, p. 30; Turton, Brit. Fau., p. 188; Ib., Man., p. 54, f. 37; Brard, p. 45, pl. 2, f. 8; *Helix cespitum*, Draparnaud, p. 109, pl. 6, f. 16; Pfeiffer, I, p. 39, pl. 2, f. 24, 25; *Helix erica*, Da Costa, Brit. Conch., p. 53, pl. 54, f. 8; *Helix albella*, Pennant, Brit. Zool., IV, p. 132, pl. 85, f. 122; *Zonites ericitorum*, Leach, Moll., p. 163.

Shell depressed, and subpellucid; body very large; spire very short, consisting of five much depressed volutions, but little elevated above the body, which is remarkably inflated; base furnished with a very large and deep umbilicus, which exposes, internally, nearly half of the breadth of the volutions of the spire; aperture rather longer than wide, sublunated, or nearly circular; outer lip thin, reflected, nearly uniting all round, except where it is interrupted by the body on the columella; whole surface covered with longitudinal, slightly concentric wrinkles; colour yellowish-white, or grayish-brown; the superior portion of the body generally furnished with a brown band on its upper part, which is continuous at the base of the volutions of the spire, and defining their division; base of the body well rounded, and usually with one nearly central, concentric, broad, dark brown band, and several narrower paler ones on each side, varying from one to five in number. Diameter three-quarters of an inch, and sometimes more; height a little more than a quarter.

This species is subject to considerable variations in its colouration; sometimes quite white, which was considered by Hartmann as a distinct species, and described under the name of *H. oblitterata*; sometimes the bands are continuous, and at others interrupted in a catenated manner. It is also liable to vary in size; in some instances little more than half the dimensions of our figures. Mr. Jeffreys, in the Linnæan Transactions, XIII, p. 339, describes a variety found in Iona, one of the Western Islands of Scotland, which has a more produced spire than the ordinary form.

*Helix elegans*, Brown, Wernerian Mem., II, p. 528, pl. 24, f. 9; *Carocolla elegans*, Brown, 1st Ed., pl. 40, f. 28; *Helix disjuncta*, Turton, Conch. Dict., p. 61, f. 63.

This remarkable *lusus*, pl. XVII, f. 28, was found near Golden Bridge, Dublin, by Mr. Edward Stephens, and is in the cabinet of my old and respected friend M. J. O'Kelly, Esq., of Rochestown House, County of Dublin, where I again saw it in August, 1841.

The *H. ericitorum* is a widely diffused species throughout the South of England and the Isle of Man, and appears to abound all over Ireland and its adjacent islands. A favourite resort seems to be the marine sand banks around the coast, and

is also common in many inland situations. Mr. Thompson mentions having found a specimen nine lines in circumference at Portarlinton, where I likewise met with large and beautiful specimens. Thompson also adds, "As an exception to the more ordinary places of its occurrence, may be mentioned the ruins of Dunluce Castle, situated on the summit of an insulated mass of rocks, considerably elevated above the sea."

*Sub-Genus 6.—VERTICILLATÆ.—Férussac.*

*Shells striated, and varied in colour.*

29. *HELIX ROTUNDATA*, pl. XVII, f. 14, 18, 19, 20, and 24.—First Ed., pl. 40, f. 14, 18, 19, 20, and 24.

*Helix rotundata*, Müller, Verm., II, p. 29, No. 231; Draparnaud, p. 114, pl. 8, f. 4; Brard, p. 51, pl. 2, f. 10, 11; Pfeiffer, I, p. 44, pl. 2, f. 33, 34; Rossmassler, VII, p. 13, pl. 32, f. 454; Fleming, Brit. An., p. 263; Alder, Mag. Zool. and Bot., II, p. 109; Jeffreys, Linn. Tr., XIII, p. 342; Forbes, Mal. Mon., p. 8; Thompson, Ann. and Mag. Nat. Hist., VI, p. 30; *Helix radiata*, Montagu, Test. Brit., p. 432, pl. 24, f. 3; Da Costa, Brit. Conch., p. 57, pl. 4, f. 15, 16; Brown, Wernerian Mem., II, p. 525; Fleming, Edin. Ency., VII, p. 80; Maton and Rackett, Linn. Tr., VIII, p. 199; Turton, Man., p. 59; *Zonites radiatus*, Leach, Moll., p. 102.

*Variety 1. Spire depressed.*

*Helix Turtoni*, Fleming, Brit. An., p. 260; *Helix albella*, Nilsson, p. 30.

*Variety 2*, pl. XVII, f. 14 and 20. *Pale, nearly colourless, semitransparent, and destitute of rays.*

Shell with the spire depressed, consisting of five rather flattened, but well defined volutions; body rounded, with a subcarinated zone round its centre; base convex, with a very large and deep umbilicus, exhibiting all the superior volutions internally; aperture semilunar; outer lip thin, and not reflected; whole surface of a light brown colour, and diagonally rayed with chestnut; and with strong, longitudinally oblique, regular, close-set striæ. Diameter a little more than a quarter of an inch.

This shell is found all over Great Britain and Ireland, on old walls, dry mud banks, and under stones in woody situations.

Mr. Thompson mentions having found a specimen at Shane's Castle Park, County of Antrim, whose height and diameter were equal, and procured two of the crystalline variety at Holywood House, County of Down.

30. *HELIX PYGMÆA*, pl. XVIII, f. 48, 49.

*Helix pygmæa*, Draparnaud, p. 114, pl. 8, f. 8, 9, 10, No. 51; Férussac, Prod., No. 200; Gray, Med. Rep., 1821, p. 239; Turton, Man., p. 61, f. 46, No. 46; Pfeiffer, III, p. 21, pl. 4, f. 20, 21; Nilsson, Sacc., p. 32; Jeffreys, Linn. Tr., XVI, p. 343; Rossmassler, VIII, p. 37, pl. 39, f. 532; Alder, Mag. Zool. and Bot., II, p. 109; Thompson, Ann. and Mag. Nat. Hist., VI, p. 31; *Helix Kirbii*, Sheppard, Linn. Trans, XVI, p. 162; Jeffreys, Linn. Tr., XIII, p. 512.

Shell subdiaphanous, with the body large; spire very small, consisting of three rapidly, well defined, diminishing volutions, terminating in a subobtusate apex; aperture roundish, sublunifform, width and length equal; outer lip thin, but not reflected; of a horn-colour, with very slight longitudinal striæ; umbilicus

rather large; base rounded. Diameter about the fifteenth of an inch.

A local species in Britain, inhabiting shaded and moist localities, lurking under stones and fallen leaves, and has been met with near Clare, in Suffolk; at Devizes, Wiltshire; and near Wylam and at Twizil House, Northumberland. We found it in Rosslyn Glen, County of Mid Lothian, and Thompson says it locates at Ballantrae, Ayrshire. Mr. Thompson informs us that it is "indigenous to the more northern two-thirds of Ireland, from east to west." He particularises the Counties of Down, Antrim, Clare, and Queen's County.

It differs from the following species, in being more depressed and transparent.

31. *HELIX UMBILICATA*, pl. XVII, f. 30, 31.—First Ed., pl. 40, f. 30, 31.

*Helix umbilicata*, Montagu, Test. Brit., p. 434, pl. 13, f. 2; Maton and Rackett, Linn. Tr., VIII, p. 20; Fleming, Brit. An., p. 262; Ib., Ency. Brit., VII, p. 80; Brown, Ency. Brit., 6th Ed., VI, p. 458; Ib., Wernerian Mem., II, p. 525; Turton, Brit. Fau., p. 189; Thompson, Ann. and Mag. Nat. Hist., VI, p. 31; *Helix rupestris*, Draparnaud, p. 82, pl. 8, f. 7, 8, 9; Férussac, Prod., No. 201, pl. 80, f. 2, 3; Pfeiffer, III, p. 22, pl. 4, f. 22; Turton, Man., p. 60, f. 45; Forbes, Mal. Mon., p. 8; Alder, Mag. Zool. and Bot., II, p. 109, No. 30; *Zonites rupestris*, Leach, Moll., p. 103.

Shell subpellucid, of a dark burnt umber-brown colour; body large; spire of medium length, consisting of four much inflated volutions, deeply divided by the sutural line, and terminating in a moderately produced apex; whole shell covered by very fine, longitudinal striæ; aperture nearly circular; outer lip thin, and not reflected; base rounded and inflated, with a very large and deep umbilicus, exposing the inside of the volutions of the spire. Diameter at the base one-tenth of an inch; height not quite so much.

This shell has much the aspect of the preceding, but will be readily recognised by its superior size, being a third larger than that of the latter. It is rather local in Britain. It frequents high rocky situations, lurking in crevices, of dry and old walls, and under stones. Montagu says, "it is remarkable that this shell always affects such lofty places as the tops of houses, without one being found near the base; and in that situation its inhabitant braves equally the scorching beams of the sun in summer, and the frigid winds of winter, without attempting to descend." Thompson remarks that it is generally distributed throughout the southern three-fourths of Ireland, more particularly over the great limestone belt which traverses the country. I met with it first in Ireland, in the crevices of a mossy stone, at Clonooney Barracks, King's County. Forbes gives its habitat on walls, near Douglas, Isle of Man.

*Sub-Genus 7.—HYALINÆ.—Férussac.*

*Shell diaphanous, glabrous, hyaline, and shining.*

32. *HELIX CELLARIA*, pl. XVII, f. 59, 60.—First Ed., pl. 40, f. 59, 60.

*Helix cellaria*, Müller, Verm., II, p. 28, No. 280; Lamarck, An. San. Vert., VI, pt. 2nd, p. 91, No. 96; Pfeiffer, I, p. 42, pl. 2, f. 29, 30; Rossmassler, I, p. 70, pl. 1, f. 22; Ib., VII,

p. 36, pl. 39, f. 527; Alder, Mag. Zool. and Bot., II, p. 108, No. 22; Forbes, Mal. Mon., p. 10; Thompson, Ann. and Mag. Nat. Hist., VI, p. 32; *Helix nitida*, Draparnaud, p. 117, pl. 3, f. 23, 24, 25; Brard, p. 34, pl. 2, f. 3, 4; Brown, Ency. Brit., 6th Ed., VI, p. 458; *Helix nitens*, Maton and Rackett, Linn. Tr., VIII, p. 198, pl. 5, f. 7; Brown, Wernerian Mem., II, p. 525; *Helix lucida*, Montagu, Test. Brit., p. 425, pl. 23, f. 4; Turton, Man., p. 56, pl. 4, f. 40; *Zonites lucida*, Leach, Moll., p. 10.

Shell thin, smooth, glossy, and pellucid, of a yellowish-green horn-colour; body very wide, but short; spire small, much depressed, and very little elevated above the body, consisting of four volutions, not deeply divided, but well defined by the sutural line, terminating in a blunted apex; base not much rounded, furnished with a moderately large and very deep umbilicus, and of a paler colour than the superior portion; aperture luniform, compressed, oblique, its length and width equal; outer lip thin, and not at all reflected. Varying in diameter from half an inch to three-quarters.

This species is almost universally diffused throughout Great Britain and Ireland. Its habitat is variable, sometimes being found in cellars,—hence its name,—and at other times lurking under stones on the sides of roads, or in meadows and fields, and always in damp situations. T. W. Warren, Esq., of Dublin, possesses some very large specimens, measuring seven lines and a half in diameter, which he found in drains within the City of Dublin.

33. *HELIX ALLIARIA*, pl. XVII, f. 48 and 52.—First Ed., pl. 40, f. 48 and 52.

*Helix alliaria*, Miller, Ann. Phil., N. S., VII, p. 379; Turton, Man., p. 56, f. 39; Alder, Mag. Zool. and Bot., II, p. 108; Thompson, Ann. and Mag. Nat. Hist., VI, p. 32; *Helix nitens*, Sheppard, Linn. Trans., XVI, p. 160; *Helix feteda*, Stark, Elem. Nat. Hist., II, p. 59; *Helix alliacea*, Jeffreys, Linn. Tr., XIII, p. 341 and 511.

Variety 1. *Larger*.

*Helix glabra*, Studer; Férussac, Prod., No. 215; Alder, Mag. Zool. and Bot., II, p. 108; Rossmassler, VIII, p. 36, pl. 39, f. 528.

Variety 2. *Greenish-white, and very transparent*.

Shell almost smooth, thin, very glossy, transparent, yellowish or a greenish horn-colour; body large, slightly produced on the sides; spire small, consisting of three nearly depressed, but deeply divided volutions; base a little rounded, and whitish; aperture sublunate and suboblique, clasping about two-thirds of the body; whole surface covered with nearly obsolete, longitudinal wrinkles, which are only visible by the aid of a strong lens; umbilicus large and deep. Diameter a quarter of an inch; height about half its circumference.

This species has much the aspect of *H. cellaria*, but is only about a third of the size; it is much more glossy and transparent than either the *H. cellaria* or *nitidula*, the aperture is less oblique than either, and the umbilicus larger. When alive, it has a fetid smell, somewhat resembling garlic.

Its habitat is in woods and shaded places, under decayed leaves, &c.; and on wet banks, among mosses and jungermanniæ.

This species is met with in all parts of Britain; and is plen-

tiful near Lancaster, the neighbourhood of Durham, and Gisborne Park, Yorkshire; near Edinburgh, and in Fifeshire, Scotland. Jeffreys says he found it so far north as Lerwick, in Shetland, near the sea shore under stones. Mr. Thompson says that it occurs in Ireland, from the exposed sea shore to the mountain side, and in shaded situations in woods. The green variety is the most common in Ireland, as well as in Scotland.

34. *HELIX NITIDULA*, pl. XVIII,\* f. 1, 2.

*Helix nitidula*, Draparnaud, p. 117, pl. 8, f. 21, 22; Gray, Med. Rep., 1821, p. 239; Sheppard, Linn. Trans., XIV, p. 160; Jeffreys, Linn. Tr., XIII, p. 340; Alder, Cat., p. 134, f. 49; Ib., Mag. Zool. and Bot., II, p. 107; Thompson, Ann. and Mag. Nat. Hist., VI, p. 32.

Variety 1. *Helix Helmi*, Gilbertson, MSS.; Alder, Local. Cat., p. 107.

Shell subpellucid; consisting of four and a half volutions, the whole much depressed, those of the spire but little raised, and defined by a very slender line, the body one rounded at the sides; apex obtuse; base a little concave, with a large and deep umbilicus, exposing the lower volutions of the spire internally; aperture semilunar; whole surface with rather strong, longitudinal wrinkles; of a dull yellowish-brown above, the base more glabrous, except close around the umbilicus, where it is opaque and whitish. Diameter about three-tenths of an inch.

It differs from *H. cellaria* in being a little more convex above, and somewhat more concave below. Its dull aspect above is also a well marked character. The opaque white below is not so much spread as in the former species.

Found under stones, at the sides of hedges, in England, where it is rather local, and in Ireland, where it is generally diffused, Mr. Thompson gives its habitat "among mosses, in glens and sheltered places;" and adds, "from two localities in this country (Ireland), I have seen Helices of crystalline transparency, and in form intermediate between *H. nitidula* and *H. alliaria*."

35. *HELIX LUCIDA*, pl. XVIII,\* f. 3, 4.

*Helix lucida*, Draparnaud, p. 103, pl. 8, f. 11, 12; Pfeiffer, I, p. 35, pl. 2, f. 18; Von Alten, S. 72, pl. 8, f. 15; Thompson, Ann. and Mag. Nat. Hist., VI, p. 33; Alder, Mag. Zool. and Bot., II, p. 107; Turton, Man., p. 56, pl. 5, f. 38; Brard, p. 34, pl. 2, f. 3, 4; *Helix nitida*, Gray, Med. Rep., 1821, p. 239.

Shell dark chocolate-colour when the inhabitant is alive, and of a dark horn-colour when extracted, subdepressed; spire slightly elevated, consisting of four volutions, finely striated longitudinally; base a little produced, with a large umbilicus, in which the second volution is visible; aperture subrotund. Diameter about a quarter of an inch.

This species may be confounded with its congeners, but will be distinguished from *H. nitidula*, *cellaria*, and *alliaria*, by its greater convexity, its more regular striæ, darker colour, and in being devoid of the opaque whitish aspect of its base.

This is a rare and local species. It has been met with near Wolverhampton; Tenby, Wales; in the neighbourhood of Shrewsbury, and near Newcastle-upon-Tyne. Mr. Thompson remarks that it appears to be rare in Ireland, as well as in England. He gives as localities, in the rejectamenta of the rivers Lagan and Blackwater, near Belfast; also near Portarlinton and Finnoe, north of Tipperary.



36. *HELIX RADIATULA*, pl. XVIII,\* f. 5, 6.

*Helix radiatula*, Alder, Cat., p. 12, No. 50; Ib., Mag. Zool. and Bot., II, p. 107; Jeffreys, Linn. Tr., XIII, p. 511; Thompson, Ann. and Mag. Nat. Hist., VI, p. 33; *Helix striatula*, Gray, Med. Rep., 1821, p. 239; *Helix brevipes*, Turton, Man., p. 65, pl. 5, f. 50.

Shell pellucid, diaphanous, horn-coloured, depressed; spire but little elevated above the body volution, and consisting of three volutions, which are particularly flat at their junction; body large, in proportion to the spire; upper parts covered with regular, continuous, longitudinal striæ, and producing a radiated appearance; base smooth, with a moderately sized umbilicus. This is an exceedingly minute species, its diameter hardly exceeding the twentieth of an inch.

Its habitat is in wet mossy ditches, and in damp wooded localities.

Distinguished from the young of *H. zonites*, by the great flatness of the volutions at their lower side, and by the striæ being more regular and decided.

This shell occurs in many parts of Britain. Mr. Thompson gives as localities, Dovedale, Derbyshire; the Falls of Clyde, Lanarkshire; and Ballantrae, Ayrshire; and in Ireland, he says it is widely distributed, namely, Londonderry, near Dublin, Downshire, Antrim, Tyrone, Cork, and Queen's County.

37. *HELIX CRYSTALLINA*, pl. XVIII,\* f. 7, 8.

*Helix crystallina*, Müller, Verm., II, p. 23, No. 223; Pfeiffer, I, p. 46, pl. 2, f. 36; Draparnaud, p. 118, pl. 8, f. 13 to 28; Gray, Med. Rep., 1821, p. 239; Alder, Mag. Zool. and Bot., II, p. 108; Turton, Man., p. 58, f. 42; Jeffreys, Linn. Tr., XIII, p. 341 and 511; Thompson, Ann. and Mag. Nat. Hist., VI, p. 34; Rossmassler, VIII, p. 37, pl. 39, f. 531, var.; *Helix vitrea*, Brown, Edin. Journ. Nat. and Geo. Science, I, p. 12, pl. 1, f. 12, 13, 14; *Zonites crystallinus*, Leach, Moll., p. 105.

Shell thin, depressed, of a very glossy, crystalline, greenish-white colour; spire with five well defined, gradually decreasing volutions, terminating in an extremely small, hardly-raised apex; base of the shell a little convex, provided with a small, but deep umbilicus; aperture semi-lunate, and enveloping the body. Diameter three-sixteenths of an inch.

This species may at once be distinguished from its congeners, by its extremely glass-like aspect, the number of its volutions, and in the body one being but little thicker than the lower volution of the spire.

The *H. crystallina* is not uncommon in many parts of England. It was first found in Scotland by my esteemed friend James Gerard, Esq., who detected it in an old wall at Corstorphine Hill, near Edinburgh; where I afterwards found it. Thompson says it is generally distributed in Ireland, occurring in moss, under stones, and upon decaying wood, both in wet and dry situations. He adds, "Some adult specimens which I have collected have had but three and a half volutions, instead of four and a half or five, the ordinary number." I have great doubts of these last mentioned being really the *H. crystallina*, as one of its strongest characters is, the number of its volutions, in which it is only equalled by the following species.

38. *HELIX EXCAVATA*, pl. XVIII,\* f. 9, 10.

*Helix excavata*, Bean; Alder, Cat., p. 13, No. 53; Ib., Mag. Zool. and Bot., II, p. 107; Thompson, Ann. and Mag. Nat.

Hist., VI, p. 34; *Helix lucida*, var., Turton, Man., p. 57, pl. 4, f. 39; *Helix nitida*, Jeffreys, Linn. Tr., XIII, p. 339 and 511.

Shell subglobose, transparent, diaphanous, shining, yellowish horn-coloured, and covered with longitudinal, irregular wrinkles; body very large; spire subdepressed, small, consisting of four or five well rounded, close-set volutions, terminating in an obtuse apex; base considerably inflated, and provided with a large and deep umbilicus, in which may be seen the inside of the volutions, nearly to the apical one; aperture slightly lunate, or nearly round. Diameter about a quarter of an inch.

Discovered near Scarborough by Mr. Bean, and has been found by Mr. Alder in Northumberland; and Thompson says he has seen but one Irish specimen, which was procured at Dunscombe Wood, near Cork, by Miss King, of Cork.

Its favourite habitat is timber which has been cut down, and under decayed wood.

39. *HELIX PURA*, pl. XVIII,\* f. 11, 12.

*Helix pura*, Alder, Cat., No. 46; Ib., Mag. Zool. and Bot., II, p. 108; Thompson, Ann. and Mag. Nat. Hist., VI, p. 32; Turton, Man., p. 59, the description only; *Helix nitidula*, var.  $\beta$ , Jeffreys, Linn. Tr., XIII, p. 511.

Variety 1. *Shell pale horn-coloured.* Alder, Mag. Zool. and Bot., II, p. 108.

Shell nearly white, depressed, somewhat pellucid, and glossy, a little striated, or wrinkled; body large; spire small, with three volutions, placed somewhat oblique; base considerably flattened, provided with a large and deep umbilicus; base never opaque. Diameter between a fifth and sixth of an inch.

This shell differs from *H. crystallina* in being larger, more convex, and less glossy; the volutions are not so closely set, the body somewhat larger in proportion to the spire, with a larger umbilicus, and especially in the fine, regular striæ, of which the *H. crystallina* is destitute.

Found near Newcastle-upon-Tyne by Joshua Alder, Esq., and as far as is known, rather a local species in England; in Ireland, according to Thompson, it is rather widely spread; its usual habitat being among moss, in sheltered situations. I found it near Cabinteely, County of Dublin. The yellowish horn-coloured variety is most commonly met with.

Sub-Genus 8.—*TRIGONOSTOMA*.—Férussac.

*Shell subdiscoidal; apex depressed; base umbilicated; aperture trigonal; outer lip denticulated; epidermis for the most part hispid.*

40. *HELIX OBVOLUTA*, pl. XVIII,\* f. 13, 14.

*Helix obvoluta*, Müller, Verm., II, p. 24; *Helix holosericea*, Draparnaud, p. 112, pl. 7, f. 27 and 29; Brard, p. 62, pl. 2, f. 16, 17; Pfeiffer, I, p. 41, pl. 2, f. 28; Rossmassler, I, p. 70, pl. 1, f. 21; Férussac, Prod., p. 38, No. 107; Lindsay, Linn. Trans., XVI, p. 765.

Shell reddish-brown, planorbiform, depressed both above and below, and largely umbilicated; spire concave, and consisting of five narrow volutions; aperture triangular; the outer lip reflexed, pale red, and provided internally with a small, blunted tooth. Diameter five-eighths of an inch.

Discovered by Dr. James Lindsay in Ditcham Wood, near Brenton, Hampshire, where he collected about twenty specimens. Its habitat is among moss at the roots of trees. As this shell is a well known continental species, and having been found in one locality only, it is probable that it has been introduced among plants.

41. *HELIX MARGARITACEA*, pl. XVII, f. 54, 55, 56.—First Ed., pl. 40, f. 54, 55, 56.

Shell depressed both above and below, very thin and hyaline; spire hardly elevated above the body, and consisting of three pretty well rounded and rapidly decreasing volutions; sides of the body inflated, and rather thick in proportion to its size; base rounded, and provided with a small and shallow umbilicus; aperture suborbicular, with a very thin outer lip; whole surface of a pearly white, exhibiting iridescent reflections. Diameter an eighth of an inch.

Discovered by James Gerard, Esq., on an old wall at Corstorphine Hill, near Edinburgh.

### ORDER III.—GASTEROPODA.

Animals with straight bodies, never spiral, nor totally enveloped in their shell; the foot, or disc, situated under the belly, united to the body nearly its whole length, and serving as an organ of locomotion.

#### DIVISION I.—PNEUMOBANCHIÆ.

Branchiæ in the form of a vascular net, or the wall of a particular cavity, opening by a hole which the animal contracts or dilates at pleasure. The animals respire air.

#### FAMILY I.—LIMACINEA.

Animals almost wholly naked, with elongated bodies, creeping by means of a ventral disc, with a narrow mantle bordering their sides.

#### GENUS 1.—VITRINA.—Drapernaud.

Shell oblong, thin, transparent, fragile, and glassy; spire short, depressed, with seldom more than three, rapidly increasing volutions; body large; aperture very ample, its width being generally greater than its length, and somewhat oblong; margin of the outer lip thin; columellar side deeply emarginate by the body; columella merely a simple spiral line.

1. *VITRINA PELLUCIDA*, pl. XVII, f. 6, 7, and 12.—First Ed., pl. 40, f. 6, 7, and 12.

*Vitrina pellucida*, Drapernaud, p. 119, pl. 8, f. 34 to 37; Lamarck, An. San. Vert., VI, pt. 2nd, p. 53; Fleming, Brit. An., p. 267; Ib., Phil. Zool., II, p. 459, pl. 4, f. 1; Turton, Man., p. 31, f. 21; Alder, Mag. Zool. and Bot., II, p. 105; Forbes, Mal. Mon., p. 7; Thompson, Ann. and Mag. Nat. Hist., VI, p. 19; *Vitrina Dillwynii*, *depressa*, and *diaphana*, Jeffreys, Linn. Tr., XVI, p. 326; *Vitrina Mülleri*, Jeffreys, Linn. Tr., XV, p. 326; *Vitrina Drapernaudi*, Leach, Moll., p. 80; Jeffreys, Linn. Tr., XVI, p. 326; *Vitrina beryllina*,

Pfeiffer, p. 47, pl. 3, f. 1; *Vitrina elongata*, Turton, Man., p. 31, f. 22; *Helix pellucida*, Müller, Verm., II, p. 16; Pennant, Brit. Zool., IV, p. 138, No. 134; *Helix elliptica*, Brown, Wernerian Mem., II, p. 525, pl. 24, f. 8; *Helicolimax pellucidus*, Férussac, Hist. Moll., pl. 9, f. 6.

Shell elliptical, subdepressed, very thin, of a pale yellowish-green colour, hyaline, and extremely glossy; body very large, oblique; spire very small, and consisting of two volutions, which rise but little above the body, and terminate in an obtuse apex, well defined by a striated sutural line, discoverable only by the aid of a lens; aperture oval, and very large, interrupted above by the superior portion of the body; outer lip thin, frequently with a pale brown margin; pillar lip slightly reflected, and a little concave above.

Subject to some variety both in form and colour; but all I have seen are only entitled to rank as one species.

This species is found in all localities; for I have met with it in very moist situations, among decayed leaves, under stones, &c., and I have procured specimens near the summit of Arthur's Seat, at Edinburgh, eight hundred feet above the level of the sea. It prevails all over Ireland, and Thompson has found it in high mountain localities.

I first observed this species in the cabinet of Mr. Dixon, of Bishop-Wearmouth, in 1810, and drew and described it under the name of *Helix virides*; as it was the green variety. I afterwards met with the pale yellowish-white variety, in 1814, at Farbane, King's County, Ireland.

#### GENUS 2.—TESTACELLA.—Cuvier.

Shell very small, compressed, placed externally on the animal, auriform; apex obsoletely spiral, consisting of less than two volutions; aperture very large, wide, and oblique; columella flat; outer lip reflected, and thin, with a slight sinus behind.

This singular univalve is found attached to the back of the animal, near its posterior extremity.

1. *TESTACELLA HALIOTOIDEA*, pl. XVIII,\* f. 15, 16.

*Testacella Haliotoidea*, Drapernaud, p. 121, pl. 8, f. 44, 45; Lamarck, An. San. Vert., VI, pt. 2nd, p. 52; Cuvier, An. du Mus., V, p. 440, pl. 29, f. 6, 7; Thompson, Ann. and Mag. Nat. Hist., VI, p. 19; *Testacella scutulum*, Sowerby, Gen. Rec. and Foss. Sh., f. 3, 3; *Testacellus Haliotoideus*, Férussac, Hist., pl. 8, f. 5 to 9; Sowerby, Gen., f. 1, 2; Alder, Mag. Zool. and Bot., II, p. 105; *Testacella Europæa*, Roissy. Buffon, V, p. 252.

Variety 1. *Testacella scutulum*, Sowerby.

Shell auriform, ovoid, or elongated; vertex rather large, acute, placed at one extremity, and pointing to one side; aperture very large; pillar lip, near its upper extremity, broad, flat, and very slightly reflected at the edge; outer lip dilated.

Inhabits gardens, at Lambeth, and other localities near London. It was found many years ago at Youghal, Ireland, by Robert Ball, Esq., of Dublin. The Irish specimens agree with the *T. scutulum* of Sowerby. Mr. Thompson says it has also been found in a garden at Bandon, by Mr. G. S. Allman. I concur with Mr. Ball and Mr. Thompson, in considering the *T. Haliotoidea* as an indigenous British and Irish species.

## GENUS 3.—ARION.—Férussac.

Shell an oblong mass of granular, spongy, corneous substance, enveloped in the mantle of the animal, sometimes consisting only of a few granules in a rudimentary condition.

## Section I.—Shell oval and concave.

## 1. ARION HORTENSIS.

Variety 1. *Animal black, with gray streaks.*

*Arion hortensis*, Férussac, Moll., 6, pl. 11, f. 4, 5, 6, VIII, a, f. 2, 3, 4; Gray, Med. Rep., 1821; Thompson, Ann. and Mag. Nat. Hist., VII, p. 18; *Limax subfuscatus*, Pfeiffer, pl. 4, f. 20; *Limax hortensis*, Grateloup, Moll. Dax., p. 55, f. 4; *Limacellus variegatus*, Turton, Man., p. 25, pl. 3, f. 16, shell; *Limacella concava*, Brard, p. 121, shell.

Variety 2. *Animal gray, with a black streak on both sides.*

*Arion hortensis*, var.  $\beta$ , Alder, Mag. Zool. and Bot., II, p. 105; *Arion circumscriptus*, Johnston, Edin. New Phil. Journ., V, p. 77; *Limax fasciatus*, Nilsson, Fau. Succ., p. 3.

Shell oval, misshapen, and somewhat concave.

Inhabits woods in Great Britain and Ireland; in the latter country, Thompson says it is common throughout the North.

Section II.—Shell, if any, nearly circular, spongy, and rudimentary.

## 2. ARION EMPIRICORUM.

*Arion empiricorum*, Férussac, Hist. Moll., 60, p. 17, pl. 1, f. 23; Alder, Mag. Zool. and Bot., II, p. 105; *Arion ater*, Thompson, Ann. and Mag. Nat. Hist., VII, p. 18; *Limax ater*, Linné, Fau. Succ., p. 507; Müller, Verm., II, p. 2; Drapernaud, p. 122, pl. 9, f. 3, 4, 5, 6; Nunneley, Trans. Phil. Soc. Leeds, p. 46, pl. 1, f. 1, pl. 2, f. 1, pl. 1, f. 1, 3, and 6; *Limax Rufus*, Drapernaud, p. 123, pl. 9, f. 6.

Shell spongy, sub-hemispherical.

This species is very common throughout Great Britain and Ireland, in gardens and woods. Miss M. Ball says the yellow variety is found in the North and South.

## GENUS 4.—LIMAX.—Linnæus.

Shell oblong, subquadrate, scutiform, extremely thin, and crystalline; covered with a pale brown epidermis, which extends beyond the margin of the shell; apex rounded, not convolute, but provided with a cavity at the top.

Section I.—Mantle of the animal produced behind; shell depressed.

## 1. LIMAX MAXIMUS, pl. XVIII,\* f. 17.

*Limax maximus*, Linnæus, Syst. Nat., p. 1081, No. 4; Thompson, Ann. and Mag. Nat. Hist., VI, p. 18; *Limax cinereus*, Müller, Verm., II, p. 8, No. 204; Gmelin, Syst. Nat., I, p. 3101; Alder, Mag. Zool. and Bot., II, p. 105; Forbes, Mal. Mon., p. 6; *Limax antiquorum*, Férussac, Hist., p. 68, pl. 4, f. 8, a, f. 1, pl. 4, f. 4, shell; *Limax maculatus*, Leach, MSS.; Nunneley, Trans. Phil. Soc. Leeds, I, p. 46, pl. 1, f. 2; *Limacella Parma*, Brard, p. 110, pl. 4, f. 1, 2, 9, 10, shell; *Limacellus Parma*, Turton, Man., p. 24, pl. 2, f. 14, shell.

Shell thin, cream-white, subdiaphanous, depressed, slightly concave internally; aperture nearly the whole size of the shell, with the margin of the outer lip membranaceous, and very thin; external surface slightly wrinkled transversely, and sometimes

studded with minute, glistening, crystalline particles; apophysis of adhesion, small, prominent, situate on the extremity of the top, or broader end; opposite end rounded, and very thin. Length about six lines; breadth four lines.

This species is common all over Great Britain and Ireland, and the Isle of Man, frequenting the bottoms of hedges and damp situations.

The Rev. B. J. Clarke, of Tuam, has kindly sent me a drawing of a very distinct variety of this animal.

Section II.—Shell depressed; mantle of the animal short, and posteriorly rounded.

## 2. LIMAX FLAVUS, pl. XVIII,\* f. 18.

*Limax flavus*, Linnæus, Syst. Nat., p. 1082; Ib., Fau. Succ., p. 363, No. 2092; Pennant, Brit. Zool., IV, p. 41; Latham, Linn. Trans., I, p. 182; Thompson, Ann. and Mag. Nat. Hist., VI, p. 18; *Limax variegatus*, Drapernaud, p. 127; Férussac, Prod., p. 21; Ib., Hist. Moll., p. 71, pl. 5, f. 1 to 6; Alder, Mag. Zool. and Bot., II, p. 105; Nunneley, Trans. Phil. Soc. Leeds, I, p. 47, pl. 1, f. 3; *Limax succino colore*, Lister, Conch., pl. 101, f. 6; *Limacella concava*, Brard, p. 121, pl. 4, f. 5, 6, 13, 14, shell; *Limacellus variegatus*, Turton, Man., p. 25, pl. 3, f. 16.

Shell extremely thin, shield-shaped, slightly concave; anterior edge a little rounded; posterior end mammilliform; of a pale, yellowish colour.

Frequents cellars, in London and its vicinity, and has been met with at Oxford, Plymouth, Bristol, and Bath; and was discovered at Youghal, Ireland, by Robert Ball, Esq., and has also been found in the North by William Thompson, Esq., of Belfast.

Section III.—Mantle short, truncated behind; shell thick, convex beneath, and oval.

## 3. LIMAX CARINATUS, pl. XVIII,\* f. 19.

*Limax carinatus*, Leach, Moll., p. 73, pl. 8, f. 1; Alder, Mag. Zool. and Bot., II, p. 105; Thompson, Ann. and Mag. Nat. Hist., VI, p. 63; *Limax Sowerbii*, Férussac, Hist. Moll., pl. 8, f. 7, 8; Denson, Mag. Nat. Hist., VI, p. 694, f. 120, a, b; *Limacella unguolata*, Brard, p. 116, pl. 4, f. 3, 4, 11, 12; *Limacellus unguulatus*, Turton, Man., p. 25, pl. 3, f. 15.

Shell oval, or rhombic, rather thick, and convex beneath, of a pale cream-white; margin rather broad, rufous towards the top; destitute of a membrane, and never concave.

Mr. Clarke remarks, that "the peculiar thickening process in the centre gives them the appearance of having a marginal zone, or as if a smaller sized shell were placed on the top and centre of the larger, leaving a rather broad margin, which is usually of a rufous colour towards the top."

Inhabits gardens, in the vicinity of London, and at Hampstead; also at La Bergerie; Monivea, County of Galway, under stones in fields, and in tufted plants in gardens, according to the Rev. B. J. Clarke, by whom it was first noticed in Ireland.

Mr. Thompson (p. 63) mentions a species obtained by him, in 1840, near Clifden, Connemara, Ireland, while on a tour with Professor Forbes, King's College, London, and Robt. Ball, Esq., of the Castle, Dublin, which were more nearly allied to the *L. gagates* of Drapernaud, than the British specimens of *L. carinatus*. Mr. Ball has since found it on the Circular road, Dublin.



## 4. LIMAX AGRESTIS, pl. XVIII,\* f. 20.

*Limax agrestis*, Linné, Syst. Nat., p. 1082, No. 6; Gmelin, Linn. Syst. Nat., p. 3101, No. 6; Müller, Verm., II, p. 8, No. 204; Drapernaud, Hist. des Moll., p. 126, pl. 9, f. 9; Sturm, Fau. Abthl., VI, p. 1, pl. 4; Pennant, Brit. Zool., IV, p. 41; Lamarek, An. San. Vert., VI, pt. 2nd, p. 50; Fleming, Brit. An., p. 256; Turton, Brit. Fau., p. 133; Pfeiffer, I, p. 21; Nunneley, Trans. Phil. Soc. Leeds, pl. 1, f. 4; Alder, Mag. Zool. and Bot., II, p. 105; Thompson, Ann. and Mag. Nat. Hist., VI, p. 61; Forbes, Mal. Mon., p. 6; *Limacella obliqua*, Brard, p. 148, pl. 4, f. 7, 8, 17, 18, shell; *Limacellus obliquus*, Turton, Man., p. 26, pl. 3, f. 17.

Shell variable in form, very small, thick, hard, and of an oblong square, rounded at the corners; colour, pale yellowish-white, or gray; a little concave, and provided with a membranous edge.

This species is destitute of the abrupt thickening in the centre of the shell, which is so strongly characteristic of *L. carinatus*.

Common in fields throughout Britain; Mr. Clarke found it in Queen's County, and County of Galway, Ireland.

Mr. Clarke considers *L. filans*, var.  $\gamma$  of Férussac, as belonging to this species.

## 5. LIMAX GAGATES? VAR., pl. XVIII,\* f. 21.

*Limax gagates*? var., Férussac? Drapernaud? *Limax* No. 4, Clarke, Ann. and Mag. Nat. Hist., VI, p. 19.

Shell oval, somewhat spoon-shaped, pointed above, and rounded below; membranaceous, and subopaque.

Mr. Clarke says this shell differs materially in size and thickness from *L. variegatus*, being smaller, more membranaceous, and less opaque. The colour and markings of the animal are also very different from other British species.

Discovered by the Rev. B. J. Clarke, of Tuam, at Spire Hill, La Bergerie, Queen's County, Ireland, who has most obligingly sent me the use of beautiful drawings of the animal and shell of this as well as of all the other Irish Limacidæ. He says it is always found on trees, and never in cellars and damp vaults, &c., as *L. variegatus*.

Mr. Thompson, in his paper on the Land and Fresh Water Mollusca of Ireland, remarks, "It may be the *L. carinatus* of Leach, or *L. gagates* of Drapernaud;" but I do not think Mr. Clarke's description agrees with either of the above species. I think it more than probable that it is an entirely new species.

## DIVISION II.—HYDROBRANCHIÆ.

The branchiæ filamentary, or laminated, and pectinated, or tufted. The animals respire in water.

## FAMILY II.—BULLACEÆ.

The branchiæ situate in a particular cavity, near the posterior region of the back, and covered by a mantle; animal destitute of tentacula.

All the animals of this family are destitute of a branchial operculum, and the head very indistinctly formed. Some of them are devoid of both external and internal shell. In some species it is concealed in the mantle, and in several there is an external shell attached by a muscle.

The shells are so widened, that there is no apparent columella.

## GENUS 5.—BULLA.—Linnæus.

Shell convolute, oblong, oval, or cylindrical, with a depression above in place of a spire, the inner volutions being concave in the exterior one; aperture longitudinal, as long, or longer than the convolutions, straitened above and expanded below, in which situation it is diffuse; outer lip thin; columellar lip generally reflected, with a coating of shelly matter.

## Sub-Genus 1.—BULLA.—Linnæus.

Shell placed on the posterior portion of the body of the animal, and provided with an epidermis.

1. BULLA LIGNARIA, pl. XIX, f. 23, 24.—First Ed., pl. 38, f. 23, 24.

*Bulla lignaria*, Linné, Syst. Nat., p. 1184; Lamarek, An. San. Vert., VI, pt. 2nd, p. 53; Pennant, Brit. Zool., IV, p. 126, pl. 70, f. 83; Montagu, Test. Brit., p. 205; Donovan, pl. 27; Fleming, Brit. An., p. 92; Maton and Rackett, p. 125; Ib., Ency. Meth., pl. 359, f. 3; Forbes, p. 6.

Shell oblong-oval, thin; spire concealed, subumbilicated, being enveloped in the body volution; aperture glossy, bluish-white internally, extending the whole length of the shell, narrow above, and abruptly expanding below, terminating in a rounded base; outer lip thin at the edge; inner lip pretty broadly reflected over the columella; surface transversely striate, of a pale reddish-yellow, with numerous, transverse, burnt terra-sienna coloured double lines, producing a wood-like appearance; longitudinal lines of growth distinct, frequently interrupting the transverse ones.

This beautiful shell is by no means uncommon in all the seas around Great Britain and Ireland. On the coasts of the latter country it grows to a large size.

2. BULLA ALBA, pl. VIII, f. 3.—First Ed., pl. 51, f. 3.

*Bulla alba*, Turton, Zool. Journ., II, p. 364, pl. 13, f. 5; Fleming, p. 294.

Shell cream-white, oblong-oval; no visible spire; apex umbilicate; aperture extending the whole length of the body, narrow above, its lower half very wide, terminating in a well rounded base; outer lip sharp at the edge, and not elevated above the body; inner lip rather broadly reflected on the columella; whole external surface with slight longitudinal striæ; at each extremity, three transverse punctured striæ.

Dr. Turton remarks, "they are more elongated than the *Bulla ampulla*, and essentially differ in having only three rather remote, transverse striæ at each end, whereas in the latter there are seven or eight striæ on the lower extremity, and none on the upper."

Dredged in the British Channel by Dr. Turton, who says he got six dead specimens in one locality.

3. BULLA ZONATA.

*Bulla zonata*, Turton, Mag. Nat. Hist., VII, p. 352; *Bulla scaphander*, Leach.

"Shell oval, solid, opaque, with alternate zones of white and fulvous, and transverse lines of minute raised dots. Length a quarter of an inch; breadth nearly as much.

"This very elegant species in shape very much resembles a small *Bulla lignaria*; but is of a more conic oval shape, with the volutions more loosely connected; the crown is umbilicated, and, together with the pillar, pure white. On the body are regular, rather broad, alternate, transverse bands of white and pale rufous brown; and round each of the white belts is a regular line of very minute, raised granular dots.

"Found near the Land's End." In the cabinet of Mr. Clark.

4. *BULLA HYDATIS*, pl. XIX, f. 29, 30.—First Ed., pl. 38, f. 29, 30.

*Bulla Hydatis*, Linné, Syst. Nat., p. 1183, No. 377; Donovan, pl. 88; Montagu, p. 217; Lamarck, VI, pt. 2nd, p. 35; Fleming, Brit. An., p. 292.

Shell somewhat opaque, tumid, no apparent spire, but in its stead an umbilicated hollow, slightly oval, thin, fragile, subpellucid, of a yellowish, or greenish horn-colour, with a thin, transparent, ferruginous epidermis; superior portion of the aperture oblong, rising above the body, and rounded, a little contracted at the top, and widening below, where it terminates in a rounded base; outer lip thin, slightly inflected; inner lip white, a little reflected on the columella; whole surface with fine transverse striæ, and remote longitudinal lines of growth. Length an inch; breadth three-quarters.

Found at Weymouth and Poole, Dorsetshire; Salcomb Bay, Devonshire; and is not uncommon on the Western coast.

5. *BULLA PRODUCTA*, pl. XIX, f. 15, 16.—First Ed., pl. 38, f. 15, 16.

Shell subcylindrical, very pellucid, white, smooth, and glossy; spire concealed, subumbilicate; aperture narrow, terminating in a rather acute base; outer lip very thin, rising considerably above the body, and somewhat pointed; a few obsolete wrinkles above. Length not a tenth of an inch; breadth hardly a third of its length.

Found at Dunbar, by my late friend General Bingham, and is in his cabinet.

6. *BULLA STRIATA*, pl. XIX, f. 41, 42.—First Ed., pl. 38, f. 41, 42.

Shell oblong-oval, inflated, white, and opaque; spire concealed, and subumbilicate; aperture a little contracted above, widening below, and terminating in a rounded base; outer lip smooth, thin at the edge, elevated a little above the body; inner lip thickened, and slightly folded back towards the base, producing a small subumbilicus behind, and somewhat duplicated; whole surface covered with minute, undulating, transverse striæ, the intermediate ones finer than the others, with a few, nearly obsolete, longitudinal lines of growth. Length not quite three-eighths of an inch; breadth two-eighths.

Found at Greenock, by my friend Stewart Ker, Esq., to whose zeal we are indebted for the discovery of several rare and interesting species.

7. *BULLA DENTICULATA*, pl. XIX, f. 25, 26.—First Ed., pl. 38, f. 25, 26.

*Bulla denticulata*, Adams, Linn. Tr., V, p. 1, pl. 1, f. 3, 4, 5; Montagu, p. 217; Fleming, Brit. An., p. 294; Maton and Rackett, p. 122.

Shell oblong, smooth, glossy, pellucid, white; aperture contracted above, and considerably expanded beneath; outer lip

terminating in a sharp, tooth-like process, and extending somewhat above the body.

Found in sand at The Wash, coast of Pembroke, by Mr. Adams. It seems a rare species.

8. *BULLA EMARGINATA*, pl. XIX, f. 21, 22.—First Ed., pl. 38, f. 21, 22.

*Bulla emarginata*, Adams, Linn. Tr., V, p. 2, pl. 1, f. 9, 10, 11; Montagu, p. 216; Maton and Rackett, p. 122; Fleming, p. 294.

Shell pellucid, smooth; body elongate, subcylindrical, narrower below; aperture very wide; outer lip much expanded; inner lip slightly inflected.

Found on the coast, near Pembroke, by Mr. Adams.

9. *BULLA CRANCHII*.

*Bulla Cranchii*, Leach; Fleming, Brit. An., p. 292.

Shell subcylindrical, apex concave, strongly striated, spirally, in bands; aperture narrow; outer lip thin, nearly even; pillar lip straight, a little reflected, and forming a slight cavity, and is somewhat waved where it joins the outer lip. Length six-tenths of an inch; diameter four-tenths.

Found in Plymouth Sound, by Mr. Prideaux.

The aperture being so narrow, renders the continuation of the pillar invisible.

#### Sub-Genus 2.—*BULLÆA*.—Lamarck.

*Shell very thin, destitute of epidermis, and concealed in the mantle of the animal; somewhat involute on one side, and without a columella or spire; aperture large and wide.*

1. *BULLÆA APERTA*, pl. II, f. 5 and 7.—First Ed., pl. 44, f. 5 and 7.

*Bullæa aperta*, Linné, p. 1183, No. 376; Lamarck, VI, pt. 2nd, p. 30; Forbes, p. 6; *Bulla aperta*, Montagu, p. 208; Maton and Rackett, p. 121; Donovan, pl. 120, f. 1, 1; Da Costa, p. 30, pl. 2, f. 3; Fleming, p. 294; Brown, Wernerian Mem., II, p. 516.

Shell compressed, suborbicular, milk-white, very thin, pellucid, and brittle; body slightly involute in front, very small, destitute of a spire, and not umbilicate above; aperture extremely large and expanded, occupying nearly the whole shell; outer lip semicircular, very thin at the edge, and elevated considerably above the body; columellar lip very short and narrow; external surface glossy, with faint longitudinal lines of growth. Length one inch; breadth three-fourths; but it is only in particular localities where it attains this size.

Not uncommon on many of the coasts of Great Britain and Ireland; we may particularise Dorsetshire, South Devon, Cornwall, Northumberland, Tenby, Frith of Forth, and Dublin Bay.

2. *BULLÆA CATINA*, pl. XIX, f. 33, 34.—First Ed., pl. 44, f. 33, 34.

*Bulla Catina*, Montagu, p. 215, pl. 7, f. 7; Maton and Rackett, p. 122; Brown, Ency. Brit., VI, p. 434; Turton, Brit. Fau., p. 168; Fleming, p. 294.

Shell oblong-ovate, pellucid, white, and glossy; body small, incurved; apex obtuse, with a visible involution above; aperture extremely large, occupying almost the entire shell, ending in a well rounded base; outer lip thin at the edge, but not extending above the body; no reflection of the inner lip on the pillar; whole surface covered with numerous, transverse, chain-like

striae, formed by continuous links, which, however, can only be seen by the aid of a strong lens. Length one-eighth of an inch; breadth somewhat less.

Found in Bigberry Bay, Devonshire, and on the coast of Pembrokeshire; it is also met with on the Dorsetshire and Northumberland coasts, Frith of Forth, and Frith of Clyde.

3. *BULLÆA PUNCTATA*, pl. XIX, f. 45, 46; and Supplementary plate, f. 1, 2.

*Bullæa punctata*, Turton, Mag. Nat. Hist., VII, p. 358; *Bulla puntata*, Adams, Linn. Tr., V, p. 2, pl. 1, f. 6, 7, 8.

"Shell oval, transparent, with transverse lines of distinct, impressed dots; crown canaliculate.

"The accurate observations of Mr. Clark, who favoured us with specimens, have fully distinguished this species from *Bulla catena* of Montagu. The shell is something smaller, of a more oval shape, with the crown more flattened; and, instead of oval, raised, chain-like points, which form the lines in *B. catena*, the lines in this species consist of distinct impressed dots.

"Mr. Clark has also been able to ascertain, that, in *B. catena*, the animal is of a yellowish-white, and furnished with a gizzard; but that the animal of *B. punctata* is of a blackish-gray colour, and destitute of any trace of gizzard.

"Found by Mr. Clark, near Exmouth."—*Turton*. First discovered on the coast of Pembroke, by Mr. Adams.

#### GENUS 6.—UTRICULUS.—Brown.

Shell small, oblong-ovate, or subcylindrical; provided with a visible, very short spire, with rather inflated volutions; aperture as long as the body volution, always contracted above, and wide beneath.

##### *Section I.—Body subcylindrical; spire a little prominent.*

1. *UTRICULUS PLICATUS*, pl. XIX, f. 1, 2.—First Ed., pl. 19, f. 1, 2.

Shell rather strong, smooth, dull milk-white, and subopaque; body very large, subcylindrical, with nearly obsolete, longitudinal wrinkles, or lines of growth; spire small, consisting of three somewhat inflated and prominent volutions, well separated by the sutural line, the lower one with a strong thread-like line at its base, which extends half way round its circumference; apex rather obtuse; aperture narrow, as long as the body, contracted above, somewhat compressed in the middle, and wide below, and terminating in a rounded base; outer lip thin, slightly inflected towards the centre; inner lip a little thickened on the columella, and near its base provided with two oblique, almost obsolete folds. Length one and a half eighth of an inch; diameter about half its length.

Discovered at Dunbar, by General Bingham. I found a variety of this species at Kirkcaldy, Fifeshire, with the volutions of the spire hardly visible.

2. *UTRICULUS DISCORS*, pl. XIX, f. 3, 4.—First Ed., pl. 38, f. 3, 4.

Shell moderately strong, subcylindrical, white, and slightly glossy, with obsolete, longitudinal lines of growth; body large; spire small, consisting of three inflated, rounded, well defined volutions, terminating in an obtuse apex; aperture long, narrow, being about three-fourths the length of the body, straitened above, slightly compressed in the centre, and dilated towards

the base; outer lip strong, and rounded on the margin; pillar lip a little reflected, and thickened on the columella. Length a sixth of an inch; diameter somewhat more than half its length.

Found at Dunbar, by General Bingham.

This species differs from the preceding, in being broader in proportion to its length, and somewhat more inflated, and is destitute of the thread-like line which invests the base of the lower volution of *U. plicatus*, as well as the plaits on the lower part of the columella, and in the aperture being shorter.

3. *UTRICULUS OBTUSUS*, pl. XIX, f. 5, 6.—First Ed., pl. 38, f. 5, 6.

*Bulla obtusa*, Montagu, p. 223, pl. 7, f. 3; Maton and Rackett, p. 128; Brown, Ency. Brit., VI, p. 434; Ib., Wernerian Mem., II, p. 517; *Bulla perperam*, Walker, pl. 3, f. 62; *Retusta obtusa*, Brown, Popular Ency., II, p. 378, pl. 17, f. 110.

Shell subcylindrical, moderately strong, white, opaque, and longitudinally wrinkled; body long; spire short, consisting of three somewhat depressed volutions, terminating in an obtuse apex; aperture as long as the body, straitened above, and expanding below, terminating in a rounded base; outer lip thin at the edge, somewhat compressed in the middle; inner lip thickened, slightly spread over the base of the columella. Length nearly a quarter of an inch; diameter about half its length.

Found on the coasts of Devonshire, Dorsetshire, Northumberland, and Wales; and at Portmarnock, Ireland.

4. *UTRICULUS LIMA*, pl. XIX, f. 39, 40.—First Ed., pl. 38, f. 39, 40.

Shell oval, oviform, rather strong, milk-white; body very large, much inflated; spire exceedingly small, scarcely elevated above the body, and consisting of two slightly inflated volutions; aperture oblong-ovate, occupying about three-fourths of the length of the body, contracted and pointed above, rapidly expanding below, and terminating in a well rounded base; outer lip strong, and flattened on the edge; pillar lip much reflected on the columella; whole surface covered with very numerous, oblong punctures, with their edges elevated, set in regular series of transverse lines, giving it much the appearance of a file when viewed through a strong lens. Length a quarter of an inch; breadth an eighth.

This beautiful little shell was discovered at Greenock, by my friend Stewart Ker, Esq., and is in his cabinet.

##### *Section II.—Body much inflated and vitreous, with the spire hardly protruding beyond the body.*

5. *UTRICULUS MINUTUS*, pl. XIX, f. 7, 8.—First Ed., pl. 38, f. 7, 8.

Shell ovate, exceedingly thin, diaphanous, and white, but not glossy; body very large, greatly inflated; spire exceedingly small, consisting of a single, blunted, papillary volution; aperture very wide, oblong-ovate, somewhat narrowed both above and at the base, which is in consequence a little pointed; outer lip extending higher than the apex, arcuated, sharp, and slightly inflected on the margin; pillar lip a little reflected on the columella, producing a subumbilicus behind. Length one-sixteenth of an inch; diameter not quite so much.

Found at Dunbar, by General Bingham.



6. *UTRICULUS CANDIDUS*, pl. XIX, f. 13, 14.—First Ed., pl. 38, f. 13, 14.

*Diaphana candida*, Brown, Conch. Text Book, p. 98, pl. 14, f. 30.

Shell oblong, oviform, snow-white, diaphanous, and pellucid; body very large, and much inflated; spire very small, sunk in a hollow foss, consisting of two volutions, the apical one blunted, papillæform, having much the appearance and lustre of a minute pearl; aperture as long as the body, nearly pyriform, contracted above, but widening gradually to an expanded and rounded base; outer lip thin, and even on the edge; pillar lip slightly reflected on the columella, with a slight internal wave on its centre, and a subumbilicus behind; body faintly wrinkled longitudinally towards the outer lip. Length one-twelfth of an inch; diameter nearly the same.

Found at Dunbar, by General Bingham; and I have since met with it at Holy Island, coast of Northumberland.

7. *UTRICULUS PELLUCIDUS*, pl. XIX, f. 10, 11.—First Ed., pl. 38, f. 10, 11.

Shell oblong-ovate, very thin, diaphanous and pellucid, and of a bluish or snow-white; body very large; spire consisting of one rounded volution, resembling a small pearl, surrounded by a fossus, formed by the upper part of the body, which is obliquely elevated considerably above it; aperture a little longer than the body, contracted above, widening below, and terminating in a well rounded base; outer lip thin, and even on the edge; pillar lip thickened, and slightly reflected on the columella, but destitute of any umbilical mark. Length a twelfth of an inch; diameter about a fourteenth.

Found at Dunbar, by General Bingham.

This species differs from the *U. candidus*, in being more oblong, the body less inflated and more cylindrical, the outer lip less expanded at the lower portion of the aperture, and the spire in having one volution; the outer lip also turns a little upwards, and curves a little inwards above before it expands, whereas the lip of the *U. candidus* gradually develops from its insertion.

8. *UTRICULUS HYALINA*.

*Bulla hyalina*, Turton, Mag. Nat. Hist., VII, p. 353; *Bulla Roxama*, Leach.

“Shell oval, transparent, smooth; aperture dilated at the base; pillar umbilicate; crown flattened, channelled, umbonate.

“It something resembles the *Bulla umbilicata*; but is shorter, and of a more oval shape, with the aperture more dilated, and is of a crystalline transparency. At the base of the margin there is a reflection of the pillar, forming a slight groove or umbilicus; and the central umbo on the crown is very distinct and prominent. The last two marks seem to fix it in the genus *Cymba* of Lamarck and Sowerby; but we have not remarked the sharp plaits on the pillar.

“Found abundantly on the coast about Tynemouth; whence it was sent us by Mr. Alder. We also discovered it near the Land's End, Cornwall.”—*Turton*.

#### GENUS 7.—*AKERA*.—Brown.

Shell extremely thin, horny, and elastic; apex obtuse; suture of the spire canaliculated, and the volutions for the most part not protruding beyond the body; aperture extending the whole length of the body, always contracted above, and expanded below; the outer lip separated from the body volution.

1. *AKERA FLEXILIS*, pl. XIX, f. 31, 32.—First Ed., pl. 38, f. 31, 32.

*Akera flexilis*, Brown, Conch. Text Book, p. 98, pl. 14, f. 29; *Ib.*, Popular Ency., II, p. 378, pl. 17, f. 109; *Bulla Akera*, Müller, Zool. Dun., p. 71, f. 2 and 5; Montagu, p. 219; Maton and Rackett, p. 125; Brown, Wernerian Mem., II, p. 516; *Ib.*, Ency. Brit., VI, p. 434; Fleming, p. 292; *Bulla resiliens*, Donovan, pl. 79; *Bulla fragilis*, Lamarck, VI, pt. 2nd, p. 36.

Shell oblong-ovoid, extremely thin, pellucid, horn-coloured, and elastic, somewhat wrinkled longitudinally; spire small, canaliculated, with an obtuse apex, and not protruding beyond the body; aperture white, as long as the body, acutely contracted above, very wide, and rounded below; outer lip extremely thin and elastic, the upper portion lying close to the body volution, but detached, and adherent to the lower volutions of the spire; pillar lip white, a little thickened, and reflected over the columella, which is visible to the end. Length one inch; diameter somewhat more than half its length.

This species is so extremely thin and membranaceous, that it appears an extremely delicate shell, which, however, is not the case. Some of them are transparent horn-coloured, both internally and externally.

Found in many places on the coasts of Britain and Ireland; and we may particularise Banff, in Scotland; Lymington, Poole, Dorsetshire, and near Southampton; and I met with it in vast numbers, amongst sea weed near high water mark, at Warren Point, near Dundalk, Ireland.

#### FAMILY III.—*ANCYLIDÆ*.

Animals fluviatile; they breathe air, respiring on the surface of the water; breathing apparatus situate in a bag-shaped cavity on the back of the neck.

#### GENUS 8.—*ANCYLUS*.—Müller.

Shell thin, obliquely conical, patelliform; vertex somewhat pointed, short, turned backwards, and inwards, but not spiral; aperture oval, or oblong, with the margins simple and entire.

##### Section I.—*Animals sinistral*.

1. *ANCYLUS FLUVIATILIS*, pl. XII, f. 1, 4, and 6.—First Ed., pl. 36, f. 1, 4, and 6.

*Ancylus fluviatilis*, Müller, Verm., II, p. 194, No. 381; Draparnaud, p. 48, pl. 2, f. 23, 24; Pfeiffer, p. 107, pl. 4, f. 44, 45; Brard, p. 200, pl. 7, f. 3; Turton, Man., p. 140, pl. 10, f. 125; Alder, Mag. Zool. and Bot., II, p. 116; Thompson, Ann. and Mag. Nat. Hist., VI, p. 47; Lamarck, VI, pt. 2nd, p. 27; *Patella fluviatilis*, Montagu, p. 484; Linné, p. 1253; Da Costa, p. 48, pl. 3, f. 8; *Patella lacustris*, Donovan, pl. 147, f. 2; Maton and Rackett, p. 232; Brown, Ency. Brit., VI, p. 466; *Ib.*, Wernerian Mem., II, p. 533; *Crepidula lacustris*, Fleming, Edin. Ency.

Shell subconic, with the vertex sharp, slightly recurved, and situate near one end, sometimes a little hooked; pellucid, horn-coloured, covered with a dark greenish-brown epidermis, sometimes of a paler hue, beneath which the shell is of a brown horn-colour, and with a few concentric wrinkles; aperture oval; marginal lip thin; inside glossy, of a bluish-white. Length three-eighths of an inch; breadth a quarter of an inch.

A variety is sometimes found, particularly in a stream near Folkstone, in Kent, finely striated longitudinally. Montagu says this variety is so strongly striated, that it was by some considered a distinct species. He adds, "these were of an inferior size, and covered with a dusky epidermis, differing in nothing but the striæ being more conspicuous."

Common in most rivers and streams in Great Britain and Ireland, adhering to stones at the bottom.

#### Section II.—Animals dextral.

2. *ANCYLUS LACUSTRIS*, pl. XII, f. 3, 5, and 7.—First Ed., pl. 36, f. 3, 5, and 7.

*Ancylus lacustris*, Müller, Verm., II, p. 199; Draparnaud, p. 47, pl. 2, f. 25, 26, 27; Pfeiffer, p. 109, pl. 4, f. 46; Lamarck, VI, pt. 2nd, p. 27; Fleming, Brit. An., p. 280; Alder, Mag. Zool. and Bot., II, p. 116; Turton, Man., p. 141, pl. 10, f. 126; Thompson, Ann. and Mag. Nat. Hist., VI, p. 47; *Patella lacustris*, Linné, Syst. Nat., p. 1260, No. 769; Pennant, Brit. Zool., IV, p. 142; Montagu, Test. Brit., p. 484; Donovan, Brit. Sh., pl. 150; Brown, Wernerian Mem., II, p. 533; Ib., Ency. Brit., VI, p. 466; *Patella oblonga*, Maton and Rackett, Linn. Tr., VIII, p. 233; Lightfoot, Phil. Trans., LXXVI, p. 168, pl. 3, f. 1.

Shell conical, and of a much elongated, oval form, compressed on the sides, thin, smooth, but not glossy, or slightly wrinkled, nearly membranaceous, subpellucid, of a pale horn-colour, covered with a yellowish-green epidermis; vertex small, acute, placed somewhat posteriorly, a little reflected, obliquely inclining towards the narrower end; aperture oblong-oval; margin membranaceous; inside smooth, glossy, and of a bluish-white. Length a little more than a quarter of an inch; breadth about half its length.

Found in lakes and still ditches, in many situations in Great Britain and Ireland, adhering to aquatic plants. We may particularise the Stour, Dorsetshire; the Thames, near Windsor; Windermere; and in a pool near the Eccles station, on the Liverpool and Manchester Railway; Duddingston Loch, near Edinburgh; and in Ireland, I met with it in a millrace, near Naas; Thompson gives as localities, Potamogeton; in the drains of the bog meadows, near Belfast; the Lagan canal; in a pond at Moira, County of Down; and various other situations.

#### FAMILY IV.—CALYPTRACEA.

Branchiæ of the animal situate in a dorsal cavity near the neck, and included in the cavity, or projecting beyond it; shell invariably external.

#### GENUS 9.—CALYPTRÆA.—Lamarck.

Shell conical; vertex subcentral, imperforate, and acute; base or aperture orbicular, or nearly so, its margins sharp and entire; internal cavity provided with a lateral, internal appendage, or septum, which varies much in form in different species. Several species provided with a strongly marked muscular impression, situate immediately above the fold of the inner lip; in other species it is placed on the outside of the inner lip, but never within it.

1. *CALYPTRÆA SINENSE*, pl. XX, f. 16 and 18.—First Ed., pl. 37, f. 16 and 18.

*Calyptræa Sinense*, Lamarck, VI, pt. 2nd, p. 22; Brown, Conch. Text Book, p. 90, pl. 14, f. 19; *Calyptræa chinensis*, Fleming, p. 362; *Patella chinensis*, Linné, p. 1257; Montagu, p. 489; *Patella Sinensis*, Brown, Ency. Brit., VI, p. 464; *Patella albida*, Donovan, pl. 129.

Shell thin, subpellucid, subconic, much depressed, of a pale yellowish-brown colour, or cream-white, rounded at the margin; vertex nearly central, terminating in a small, concentrically subspiral tip; external surface undulated, or wrinkled, in some specimens, and a little rough, with concave scale-like projections; aperture nearly circular; inside very glossy, smooth, and white, in some instances of a very pale pink colour, and provided with a subspiral internal columella, or transverse subseptum, or columellar projection, broad, flat, thin, transversely oblique, extending from nearly the margins to the centre, on one side, and forms the external subvolution. Height somewhat more than half an inch; diameter nearly an inch.

Found at Penryn, in Cornwall; Helford Harbour; and on the West coast of Ireland; but is a rare British species.

#### GENUS 10.—PILEOPSIS.—Lamarck.

Shell obliquely conical, posteriorly recurved, with an uncinuate spiral apex, the volutions separated, and rolled inwards; aperture large, ovate; anterior margin shortest, the posterior one large and rounded; inside with elongated, transverse, muscular impressions, situated under the posterior margin; external surface clothed with a thick, hard, somewhat pilous epidermis.

1. *PILEOPSIS UNGARICA*, pl. XX, f. 19, 20.—First Ed., pl. 37, f. 19, 20.

*Pileopsis ungarica*, Lamarck, VI, pt. 2nd, p. 17; Brown, Conch. Text Book, p. 100, pl. 14, f. 31; *Patella ungarica*, Martini, I, pl. 12, f. 107, 108; Pennant, IV, p. 149, pl. 90, f. 147; *Patella ungarica*, Montagu, p. 486; Donovan, I, pl. 21, f. 1; Brown, Ency. Brit., 6th Ed., VI, p. 465; Ib., Wernerian Mem., II, p. 533; *Capulus hungaricus*, Fleming, p. 363; Forbes, p. 33.

Shell subconic, with a greatly reflected vertex, terminating in a spiral wreath underneath, consisting of two or three small volutions, which are not inclined to either side, except the apical one; it is a subpellucid, rather thin shell, strongly striated longitudinally, with strong concentric wrinkles, of a yellowish-white, or flesh-colour, and covered externally with a yellowish-brown, rough, pilous, velvet-like epidermis; aperture nearly orbicular, with an oblique, internally sloping lip, narrow towards the vertex side, and gradually widening, on both sides, towards the other extremity; inside extremely smooth and glossy, white, sometimes of the most beautiful rose-colour; outer lip more or less indented, and crenated, with the epidermis projecting beyond it, in the form of a silicate border.

This species is by no means rare on many of the coasts around Great Britain and Ireland. It is very frequently found adhering to oysters and stones brought from the bottom by the dredge.

## GENUS 11.—FISSURELLA.—Bruguière.

Shell subconic, oblong, shield-shaped, or conically depressed, concave within, destitute of spiral convolutions, with the vertex perforated, and directed towards the front of the shell; perforation subovate, elongated, or nearly round in some species; margin thickened around the inside, and generally crenulated; muscular impression visible near the inner edge, all round, widest on the sides next the anterior end; outer surface striated, ribbed, grooved, or radiated from the vertex to the margin, and generally decussated by lines of growth, or concentric ribs.

## 1. FISSURELLA GRÆCA, pl. XII, f. 10, 11.

*Fissurella Græca*, First Ed., pl. 36, f. 10, 11; Fleming, p. 364; *Ib.*, Ency., p. 66; Brown, Popular Ency., II, p. 378, pl. 17, f. 96; *Patella Græca*, Linné, Syst., p. 1262; Brown, Ency., p. 467; *Ib.*, Wernerian Mem., p. 533; Turton, Brit. Fau., p. 198; Martini, I, pl. 11, f. 98; Pennant, IV, p. 144, pl. 89, f. 153; Montagu, p. 492; Maton and Rackett, p. 236; *Patella reticulata*, Donovan, I, pl. 21, f. 3.

Shell oblong-oval, subdepressed, thick, of a dull brownish-yellow colour, with numerous, strong, longitudinal ribs, radiating from the vertex to the base, some of which are thicker than the rest, and in some instances tuberculated by the crossing of the finer, concentric, thread-like striæ, which cover the whole surface, the interstices presenting a punctated appearance; vertex perforated with an oblong-ovate fissure; inside smooth, white, sometimes of a dull, pale brownish-purple; margin not flat, but somewhat indented, or arcuated at the side, and finely crenulated on the extreme edge. Length three-quarters of an inch; breadth about half an inch; height a quarter.

The above are the general dimensions of the species, but is met with in deep water of a larger size, off the Devonshire coast, as well as that of the Isle of Man; in which locality Professor Forbes dredged some very large specimens, measuring upwards of an inch in length, and more than five-eighths in breadth.

It inhabits most of the British coasts, but is never plentiful; the Dorset, Kentish, Devonshire, and Northumberland coasts may be noticed; the Frith of Forth, the Frith of Clyde, and Argyleshire coasts, in Scotland; and Lough Strangford, Portmarnock, and Dublin Bay, Ireland.

## GENUS 12.—SIPHO.—Brown.

Shell ovate, subconic; vertex reflected, and slightly spiral; with a small dorsal fissure situate near the vertex, terminating internally by a rhombic, funnel-shaped syphon, or cup, in some species, but devoid of it in others; base ovate; exterior surface ribbed, or striated.

*Section I.—Cavity provided with a funnel, leading from the fissure.*

## 1. SIPHO NOACHINA, pl. XII, f. 14, 15, 16.

*Sipho striata*, First Ed., pl. 36, f. 14, 15, 16; Brown, Conch. Text Book, p. 100, pl. 14, f. 21; *Ib.*, Popular Ency., II, p. 378, pl. 17, f. 113; *Fissurella Noachina*, Smith, Wernerian Mem., VIII, p. 43; Sowerby; *Cemoria Flemingii*, Leach.

Shell brownish-white, very strong, ovate, subconic; vertex slightly spiral, and inclining anteriorly; with a small triangular fissure behind, broad below and acute above, situate near the vertex; aperture white, smooth, and slightly crenulated on the margin.

First discovered as British, by my friend Stewart Ker, Esq., at Greenock, where dead shells are not uncommon. Two specimens were dredged alive, off Rothesay, by my friend James Smith, Esq., of Jordan Hill, near Glasgow, while I accompanied him on a dredging excursion, in his yacht, in 1837.

It seems to have been very plentiful in the Clyde at one period, as it occurs abundantly in a subfossil state in the elevated marine bed of the Clyde, at Dalmuir.

*Section II.—Destitute of an internal funnel.*

## 2. SIPHO RADIATA, pl. XII, f. 20.

*Sipho radiata*, First Ed., pl. 36, f. 20; *Fissurella apertura*, Fleming, p. 364; *Patella apertura*, Montagu, p. 491, pl. 13, f. 20; Fleming, Ency., p. 66; *Patella Noachina*, Brown, Ency. Brit., p. 467; Maton and Rackett, p. 236; the young of *Fissurella Græca*, Forbes, Mal. Mon., p. 34.

“With a subconic, subpellucid, white shell, marked with strong, longitudinal, tuberculated ribs, and a few circular ridges, that give it a cancellated appearance; vertex reflected, the point very small, and turning downwards; not detached, but adhering to the top of the shell, sometimes making one convolution; immediately above which is a rhomboid perforation. Inside smooth, glossy, white; margin oval, edge crenated by the ribs. Length not quite a quarter of an inch, scarce an eighth of an inch in height. In one instance this shell had a few brown streaks running half way up the margin.”—*Montagu*.

In my Paper in the Encyclopædia Britannica, I considered this the *Patella Noachina* of Chemnitz; but on seeing the original shell in the British Museum, I perceived that it was a different species from *Sipho Noachinu*. It is more elliptical than the latter shell, the longitudinal ribs larger, set more apart, and the concentric striæ not so well marked; but a stronger character than these is the form of the foramen, which is nearly lance-shaped in *S. Noachina*, with an internal funnel, whereas it is oblong-ovate in *S. radiata*, and destitute of an internal funnel; with which character, a specimen found in sand at Tenby, by General Bingham, expressly agreed.

In 1819, when I made my drawing from Montagu's original specimen in the British Museum, my friend Dr. Leach concurred in opinion, that specimens with which I presented him, from the Clyde, were perfectly distinct from that in the Museum, as did also Mr. J. E. Gray; and the Doctor agreed in the propriety of instituting a new genus for their reception; but it appears he afterwards thought *Cemoria* a better name than that which I had previously chosen.

Found at Falmouth Harbour, Cornwall, and in Salcomb Bay, Devonshire, by Colonel Montagu; at Tenby, Wales, by General Bingham; and in Zetland, by Dr. Fleming; and Professor Forbes dredged it plentifully off the Manx coast, but considered it the young of *Fissurella Græca*, with which opinion I do not agree. It is not half the size of *S. Noachina*.



## GENUS 13.—EMARGINULA.—Lamarck.

Shell conical, shield-shaped; destitute of spiral convolutions; vertex inclined to the posterior extremity; anterior margin with a fissure, or notch; internal cavity simple; anterior sides of the muscular impression interrupted, expanded, and not continued across the front.

## 1. EMARGINULA FISSURA, pl. XII, f. 17 and 19.

*Emarginula fissura*, First Ed., pl. 36, f. 17 and 19; Lamarck, Syst., VI, pt. 2nd, p. 7; Brown, Conch. Text Book, p. 101, pl. 14, f. 17; Ib., Popular Ency., II, p. 378, pl. 17, f. 97; *Patella fissura*, Pennant, No. 152, p. 144, pl. 90, f. 151; Donovan, pl. 3, f. 2; Montagu, p. 490; Brown, Wernerian Mem., p. 583; Fleming, p. 365; Forbes, p. 33; Martini, I, pl. 12, f. 109, 110; Da Costa, pl. 1, f. 4; Maton and Rackett, p. 236; Turton, Brit. Fau., p. 198.

Shell brownish-white, conic, subpellucid, and rather thick; surface furnished with longitudinal and concentric striae, producing a beautiful lamellated appearance; vertex slightly reflected; anterior margin provided with a longitudinal fissure, or slit, extending about a fourth of the length of the shell; inside white, smooth, and glossy, sometimes of a skin colour; aperture oval; margin slightly crenated. Length half an inch; height three-eighths, and breadth nearly the same.

In the young shell the vertex is more reflexed, and in some instances is slightly hooked, turning backwards nearly to the anterior margin.

The *E. fissura* is rather local, and found on the coasts of Dorsetshire, Devonshire, Cornwall, Kent, and Northumberland, in England; the Frith of Forth and Clyde, Scotland; and at Portmarnock, Ireland.

## 2 EMARGINULA ROSEA, pl. XII, f. 21, 22.

*Emarginula rosea*, First Ed., pl. 36, f. 21, 22; Bell, Zool. Journ., I, p. 52, pl. 4, f. 1.

"Shell ovate, cancellated, covered with a fuscous waved epidermis; inside rose-coloured; vertex acute, very much incurved and subinvolute, provided with a marginal fissure."—Bell.

Found in Poole Harbour, by Thomas Bell, Esq., who took three specimens by dredging.

## GENUS 14.—SCISSURELLA.—D'Orbigny.

Shell subelliptical, subdepressed; spire short, small, and consisting of two or three volutions; aperture suboval, oblique; lips separated from each other above, on the left side; outer lip sharp on the margin, with an oblong, deep slit, or foramen, situate near the spire, and almost parallel with the suture, and is continued externally as a subcarina; inner lip somewhat reflected, with a large umbilicus behind it.

Probably the situation which this genus should occupy, is in the family *Turbinacea*.

## 1. SCISSURELLA CRISPATA.

*Scissurella crispata*, Fleming, Brit. An., p. 366.

"Transversely ribbed, and spirally striated; inner lip reflected on the body volution.

"Breadth about the fifteenth of an inch; white, and without any apparent cuticle; whorls three, increasing rather rapidly from the slightly elevated apex, and sloping with a gentle convexity, from the separating line to the keel; under side with a

central cavity, from which the whorls extend, a little convex to the keel. The whorls are marked by numerous fine transverse arcuated ribs, narrower than the intervening spaces, crossed by fine longitudinal striae (most conspicuous on the spaces), giving to the shell its peculiar reticulated appearance; the ribs on the upper side are coarser than those below. The aperture is sub-orbicular, slightly depressed; the outer lip thin; the inner lip slightly reflected over the cavity, spread on the body whorl, and continuous with the outer lip. From the pillar cavity a shallow gutter extends anteally, and joins the pillar lip; this is chiefly conspicuous on the largest specimens. The longitudinal slit in the middle of the outer lip extends backwards about two-thirds of the diameter of the shell, where it joins the narrow groove in the keel of the shell which it had formerly occupied. The margin of the slit is slightly elevated, as well as the groove, which is seen winding round the whorls at the separating line, nearly to the apex; the groove itself is slightly ribbed across. I found this shell in 1809, and specimens then transmitted to Colonel Montagu, were pronounced by him the fry of a *Trochus*, it is, however, a well marked shell, and belongs to the genus *Scissurella* of M. D'Orbigny."—Fleming.

Found by the Rev. Dr. Fleming, "in shell sand, at Noss, Zetland, after a storm."

## FAMILY V.—SEMIPHYLLIDIACEA.

Branchiae situate under the margin of the mantle, and set in a longitudinal series, on the right side of the body. The animals respire under water.

## GENUS 15.—PLEUROBRANCHUS.—Cuvier.

Shell placed internally on the back of the animal; halioti-form, thin, flat, and obliquely oval; convex above, towards the somewhat spiral apex, with a lateral, nearly terminal, depressed vertex; aperture entire.

## 1. PLEUROBRANCHUS PLUMULA, pl. II, f. 14, 15.

*Lamellaria plumula*, First Ed., pl. 44, f. 14, 15; *Pleurobranchus plumula*, Fleming, p. 291; Brown, Conch. Text Book, p. 102, pl. 14, f. 14; Smith, Wernerian Mem., VIII, p. 43; *Bulla plumula*, Montagu, p. 214, pl. 14, f. 9; Brown, Ency., VI, p. 435; Turton, Brit. Fau., p. 168; Fleming, Ency., VII, p. 84; Maton and Rackett, p. 183.

Shell oblong-ovate, depressed, very thin and pellucid, of a yellowish horn-colour, with a very small convolution placed near one end; whole surface strongly wrinkled concentrically, with three radiating indentations, emanating at the apex, and terminating on the lower margin; aperture the whole length of the shell; inside very glossy, with undulations corresponding to the wrinkles on the outside; pillar slightly inflected, so as to form the depressed volution. Length upwards of half an inch; breadth more than a quarter.

Discovered by Montagu on the rocks at Milton Sands, south coast of Devonshire, and has since been found in many parts of England, Scotland, and Ireland.

## 2. PLEUROBRANCHUS MEMBRANACEUS, pl. II, f. 9.

*Lamellaria membranacea*, First Ed., pl. 44, f. 9; Montagu, Linn. Trans., XI, p. 184, pl. 12, f. 3; *Pleurobranchus membranaceus*, Fleming, p. 291.

Shell ovate, submembranaceous, greatly depressed, with a single, minute volution; whole surface concentrically wrinkled; external surface covered with a silvery, iridescent epidermis, exhibiting various nacreous metallic hues, of blue, pink, and yellow; aperture extending the whole length of the shell, very glossy internally, and has undulations corresponding with the wrinkles of the outside. Length an inch and a half; and upwards of an inch in breadth.

This species is more membranous than *P. plumula*, somewhat more convex, with the volution and apex more prominent.

First found on the estuary of Kingsbridge, by Colonel Montagu; it has since been met with on several of the coasts of Britain and Ireland.

#### FAMILY VI.—PHYLLIDIACEA.

The branchiæ are situated beneath the margin of the mantle, in a longitudinal series around the body. Animals respiring in water.

#### GENUS 16.—PATELLA.—Linnæus.

Shell ovate or oblong, more or less of a conical form, destitute of spiral convolutions; sometimes, although rarely, pyramidal; apex rarely central, generally placed anteriorly, with its apex inclined towards the head of the animal; concave within, and the margin entire; muscular impressions distinct, and same form as the shell, placed about half way betwixt the summit and the margin, interrupted in front where the head of the animal is situated; external surface striated, or ribbed in a variable manner, from the apex to the base; in the latter case, the margin is variously dentated, stellated, or crenulated.

##### 1. PATELLA VULGATA, pl. XX, f. 5, 12, 14, 15, and 17.

*Patella vulgata*, First Ed., pl. 37, f. 5, 12, 14, 15, and 17; Linné, Syst., p. 1258; Lamarck, Syst., VI, pt. 1st, p. 331; Fleming, Brit. An., p. 286; Ib., Ency., p. 65; Brown, Ency. Brit., p. 465; Ib., Wernerian Mem., II, p. 532; Montagu, p. 475; Forbes, p. 36; Maton and Rackett, p. 229.

Shell subconic, oval; vertex obtuse, nearly central, or situate nearest the smaller end; external surface with numerous, divergent ribs, or striæ, emanating from the apex, and terminating on the margin, which is either plain, or stellated and indented, as the shell may be ribbed or striated respectively; external colour various, most frequently of a dull, dusky brown, reddish-brown, or dirty yellow; inside extremely glossy and transparent, variable in colour, frequently iridescent, either plain, or exhibiting beautiful radiations of blue, purple, or brown.

The *Patella vulgata* is liable to great variation in its degree of elevation, general form, and external appearance, depending, in a great measure, on the fineness or coarseness of its striæ, and the number and elevation of its ribs. In some it is covered with fine, close-set, radiating striæ, crossed by irregular, inequidistant, concentric striæ, or lines of growth; in others it is strongly ribbed, producing an indented margin; these ribs are always irregular in number, and the interstices with divergent striæ. The interior is also subject to much variety of colour; being horn-coloured, bluish-white, or yellow, and either plain, or with radiations of different hues; often with a dark brown, or blackish, large, regular mark in the middle.

The following are the more prominent varieties:

Variety 1. VULGATA, pl. XX, f. 17. *Longitudinally striated, or with ribs but slightly developed.*

Pennant, Brit. Zool., IV, p. 142, pl. 89, f. 145; Donovan, pl. 14, first fig.

Variety 2. COMMUNIS, pl. XX, f. 15. *Shell depressed, with sharp, subcarinated, irregular ribs, both in size and number, producing an acutely angular, irregular margin; between the ribs the shell is often radiated with brown or purple. This is the most common form.*

*Patella depressa*, Pennant, p. 142, pl. 89, f. 146; Da Costa, p. 3, pl. 1, f. 1, 2, and 8; Donovan, pl. 14, all the figures but the first.

Variety 3. ALBUMENA, pl. XX, f. 12 and 14. *Shell depressed; outside with numerous, nearly equidistant, divergent, rounded, but rather flat ribs, blunt at their external ends, and always protruding considerably beyond the margin, the interstices with strong and rather regular striæ; generally of a yellowish fawn-colour, and often with from four to six concentric bands of burnt terra-sienna colour; inside of a pale bluish or yellowish-white, the glazing thickened, subopaque, and not very glossy, having much the appearance of albumen.*

This variety is very easily distinguished in all the stages of its growth. I first noticed this very beautiful variety on rocks at Color Cots, near Tynemouth, Northumberland, in 1810, and T. W. Warren, Esq., of Dublin, has lately furnished me with a complete series from Portmarnock, Ireland.

Variety 4. CONICA, pl. XX, f. 5. *Shell conical; its height being nearly equal to its length; with strong, radiating, blunt, rounded ribs, protruding but little beyond the margin, which is, in consequence, but slightly undulous.*

This variety prevails on the coast near Bamborough Castle, and on some rocks at Holy Island, Northumberland. It is also met with in other places of England and Ireland. I noticed it in the latter country near Balbriggan, and at Killough, County of Down.

##### 2. PATELLA VIRGINEA, pl. XX, f. 1, 4, and 6.

*Patella virginea*, First Ed., pl. 37, f. 1, 4, and 6; Linn. Gmelin, 3711; *Patella tessulata*, Müller, Zool. Dun., pl. 12, f. 4, 5; Forbes, p. 36; Maton and Rackett, p. 234; Brown, Ency. Brit., p. 466; Ib., Wernerian Mem., p. 533; Fleming, p. 287; *Patella parva*, Da Costa, p. 7, pl. 8, f. 11; Donovan, pl. 21, f. 2; Montagu, p. 480; Turton, Brit. Fau., p. 197.

Shell thin, oval, subconic, subdepressed; generally covered with a grayish epidermis; beneath which the surface is generally beautifully radiated with alternately broad and narrow pale brownish-red or pink, frequently commingling in a catinated manner, sometimes only visible near the margin; longitudinally striated, and crossed concentrically with nearly obsolete wrinkles; vertex acute, situate nearest one end; inside smooth, glossy, of a rosy or purple hue, and in some instances white. Length upwards of three-eighths of an inch; breadth a quarter of an inch; height not quite so much. It is found but rarely half an inch long.

A local species, found in Falmouth Harbour, Whitesand Bay, Cornwall; Salcomb Bay, Devonshire; the coasts of Northumberland and Durham; the Friths of Forth and Clyde; the Manx coast; and several shores of Ireland, as Dublin Bay, Portmarnock, Lough Strangford, and Cove of Cork.

## GENUS 13.—EMARGINULA.—Lamarck.

Shell conical, shield-shaped; destitute of spiral convolutions; vertex inclined to the posterior extremity; anterior margin with a fissure, or notch; internal cavity simple; anterior sides of the muscular impression interrupted, expanded, and not continued across the front.

## 1. EMARGINULA FISSURA, pl. XII, f. 17 and 19.

*Emarginula fissura*, First Ed., pl. 36, f. 17 and 19; Lamarck, Syst., VI, pt. 2nd, p. 7; Brown, Conch. Text Book, p. 101, pl. 14, f. 17; Ib., Popular Ency., II, p. 378, pl. 17, f. 97; *Patella fissura*, Pennant, No. 152, p. 144, pl. 90, f. 151; Donovan, pl. 3, f. 2; Montagu, p. 490; Brown, Wernerian Mem., p. 583; Fleming, p. 365; Forbes, p. 33; Martini, I, pl. 12, f. 109, 110; Da Costa, pl. 1, f. 4; Maton and Rackett, p. 236; Turton, Brit. Fau., p. 198.

Shell brownish-white, conic, subpellucid, and rather thick; surface furnished with longitudinal and concentric striae, producing a beautiful lamellated appearance; vertex slightly reflected; anterior margin provided with a longitudinal fissure, or slit, extending about a fourth of the length of the shell; inside white, smooth, and glossy, sometimes of a skin colour; aperture oval; margin slightly crenated. Length half an inch; height three-eighths, and breadth nearly the same.

In the young shell the vertex is more reflexed, and in some instances is slightly hooked, turning backwards nearly to the anterior margin.

The *E. fissura* is rather local, and found on the coasts of Dorsetshire, Devonshire, Cornwall, Kent, and Northumberland, in England; the Frith of Forth and Clyde, Scotland; and at Portmarnock, Ireland.

## 2 EMARGINULA ROSEA, pl. XII, f. 21, 22.

*Emarginula rosea*, First Ed., pl. 36, f. 21, 22; Bell, Zool. Journ., I, p. 52, pl. 4, f. 1.

"Shell ovate, cancellated, covered with a fuscous waved epidermis; inside rose-coloured; vertex acute, very much incurved and subinvolute, provided with a marginal fissure."—Bell.

Found in Poole Harbour, by Thomas Bell, Esq., who took three specimens by dredging.

## GENUS 14.—SCISSURELLA.—D'Orbigny.

Shell subelliptical, subdepressed; spire short, small, and consisting of two or three volutions; aperture suboval, oblique; lips separated from each other above, on the left side; outer lip sharp on the margin, with an oblong, deep slit, or foramen, situate near the spire, and almost parallel with the suture, and is continued externally as a subcarina; inner lip somewhat reflected, with a large umbilicus behind it.

Probably the situation which this genus should occupy, is in the family *Turbinacea*.

## 1. SCISSURELLA CRISPATA.

*Scissurella crispata*, Fleming, Brit. An., p. 366.

"Transversely ribbed, and spirally striated; inner lip reflected on the body volution.

"Breadth about the fifteenth of an inch; white, and without any apparent cuticle; whorls three, increasing rather rapidly from the slightly elevated apex, and sloping with a gentle convexity, from the separating line to the keel; under side with a

central cavity, from which the whorls extend, a little convex to the keel. The whorls are marked by numerous fine transverse arcuated ribs, narrower than the intervening spaces, crossed by fine longitudinal striae (most conspicuous on the spaces), giving to the shell its peculiar reticulated appearance; the ribs on the upper side are coarser than those below. The aperture is sub-orbicular, slightly depressed; the outer lip thin; the inner lip slightly reflected over the cavity, spread on the body whorl, and continuous with the outer lip. From the pillar cavity a shallow gutter extends anteally, and joins the pillar lip; this is chiefly conspicuous on the largest specimens. The longitudinal slit in the middle of the outer lip extends backwards about two-thirds of the diameter of the shell, where it joins the narrow groove in the keel of the shell which it had formerly occupied. The margin of the slit is slightly elevated, as well as the groove, which is seen winding round the whorls at the separating line, nearly to the apex; the groove itself is slightly ribbed across. I found this shell in 1809, and specimens then transmitted to Colonel Montagu, were pronounced by him the fry of a *Trochus*, it is, however, a well marked shell, and belongs to the genus *Scissurella* of M. D'Orbigny."—Fleming.

Found by the Rev. Dr. Fleming, "in shell sand, at Noss, Zetland, after a storm."

## FAMILY V.—SEMIPHYLLIDIACEA.

Branchiae situate under the margin of the mantle, and set in a longitudinal series, on the right side of the body. The animals respire under water.

## GENUS 15.—PLEUROBRANCHUS.—Cuvier.

Shell placed internally on the back of the animal; halioti-form, thin, flat, and obliquely oval; convex above, towards the somewhat spiral apex, with a lateral, nearly terminal, depressed vertex; aperture entire.

## 1. PLEUROBRANCHUS PLUMULA, pl. II, f. 14, 15.

*Lamellaria plumula*, First Ed., pl. 44, f. 14, 15; *Pleurobranchus plumula*, Fleming, p. 291; Brown, Conch. Text Book, p. 102, pl. 14, f. 14; Smith, Wernerian Mem., VIII, p. 43; *Bulla plumula*, Montagu, p. 214, pl. 14, f. 9; Brown, Ency., VI, p. 435; Turton, Brit. Fau., p. 168; Fleming, Ency., VII, p. 84; Maton and Rackett, p. 183.

Shell oblong-ovate, depressed, very thin and pellucid, of a yellowish horn-colour, with a very small convolution placed near one end; whole surface strongly wrinkled concentrically, with three radiating indentations, emanating at the apex, and terminating on the lower margin; aperture the whole length of the shell; inside very glossy, with undulations corresponding to the wrinkles on the outside; pillar slightly inflected, so as to form the depressed volution. Length upwards of half an inch; breadth more than a quarter.

Discovered by Montagu on the rocks at Milton Sands, south coast of Devonshire, and has since been found in many parts of England, Scotland, and Ireland.

## 2. PLEUROBRANCHUS MEMBRANACEUS, pl. II, f. 9.

*Lamellaria membranacea*, First Ed., pl. 44, f. 9; Montagu, Linn. Trans., XI, p. 184, pl. 12, f. 3; *Pleurobranchus membranaceus*, Fleming, p. 291.



Shell ovate, submembranaceous, greatly depressed, with a single, minute volution; whole surface concentrically wrinkled; external surface covered with a silvery, iridescent epidermis, exhibiting various nacreous metallic hues, of blue, pink, and yellow; aperture extending the whole length of the shell, very glossy internally, and has undulations corresponding with the wrinkles of the outside. Length an inch and a half; and upwards of an inch in breadth.

This species is more membranous than *P. plumula*, somewhat more convex, with the volution and apex more prominent.

First found on the estuary of Kingsbridge, by Colonel Montagu; it has since been met with on several of the coasts of Britain and Ireland.

#### FAMILY VI.—PHYLIDIACEA.

The branchiæ are situated beneath the margin of the mantle, in a longitudinal series around the body. Animals respiring in water.

#### GENUS 16.—PATELLA.—Linnaeus.

Shell ovate or oblong, more or less of a conical form, destitute of spiral convolutions; sometimes, although rarely, pyramidal; apex rarely central, generally placed anteriorly, with its apex inclined towards the head of the animal; concave within, and the margin entire; muscular impressions distinct, and same form as the shell, placed about half way betwixt the summit and the margin, interrupted in front where the head of the animal is situated; external surface striated, or ribbed in a variable manner, from the apex to the base; in the latter case, the margin is variously dentated, stellated, or crenulated.

1. *PATELLA VULGATA*, pl. XX, f. 5, 12, 14, 15, and 17.

*Patella vulgata*, First Ed., pl. 37, f. 5, 12, 14, 15, and 17; Linné, Syst., p. 1258; Lamarck, Syst., VI, pt. 1st, p. 331; Fleming, Brit. An., p. 286; Ib., Ency., p. 65; Brown, Ency. Brit., p. 465; Ib., Wernerian Mem., II, p. 532; Montagu, p. 475; Forbes, p. 36; Maton and Rackett, p. 229.

Shell subconic, oval; vertex obtuse, nearly central, or situate nearest the smaller end; external surface with numerous, divergent ribs, or striæ, emanating from the apex, and terminating on the margin, which is either plain, or stellated and indented, as the shell may be ribbed or striated respectively; external colour various, most frequently of a dull, dusky brown, reddish-brown, or dirty yellow; inside extremely glossy and transparent, variable in colour, frequently iridescent, either plain, or exhibiting beautiful radiations of blue, purple, or brown.

The *Patella vulgata* is liable to great variation in its degree of elevation, general form, and external appearance, depending, in a great measure, on the fineness or coarseness of its striæ, and the number and elevation of its ribs. In some it is covered with fine, close-set, radiating striæ, crossed by irregular, inequidistant, concentric striæ, or lines of growth; in others it is strongly ribbed, producing an indented margin; these ribs are always irregular in number, and the interstices with divergent striæ. The interior is also subject to much variety of colour; being horn-coloured, bluish-white, or yellow, and either plain, or with radiations of different hues; often with a dark brown, or blackish, large, regular mark in the middle.

The following are the more prominent varieties:

*Variety 1. VULGATA*, pl. XX, f. 17. *Longitudinally striated, or with ribs but slightly developed.*

Pennant, Brit. Zool., IV, p. 142, pl. 89, f. 145; Donovan, pl. 14, first fig.

*Variety 2. COMMUNIS*, pl. XX, f. 15. *Shell depressed, with sharp, subcarinated, irregular ribs, both in size and number, producing an acutely angular, irregular margin; between the ribs the shell is often radiated with brown or purple. This is the most common form.*

*Patella depressa*, Pennant, p. 142, pl. 89, f. 146; Da Costa, p. 3, pl. 1, f. 1, 2, and 8; Donovan, pl. 14, all the figures but the first.

*Variety 3. ALBUMENA*, pl. XX, f. 12 and 14. *Shell depressed; outside with numerous, nearly equidistant, divergent, rounded, but rather flat ribs, blunt at their external ends, and always protruding considerably beyond the margin, the interstices with strong and rather regular striæ; generally of a yellowish fawn-colour, and often with from four to six concentric bands of burnt terra-sienna colour; inside of a pale bluish or yellowish-white, the glazing thickened, subopaque, and not very glossy, having much the appearance of albumen.*

This variety is very easily distinguished in all the stages of its growth. I first noticed this very beautiful variety on rocks at Color Cots, near Tynemouth, Northumberland, in 1810, and T. W. Warren, Esq., of Dublin, has lately furnished me with a complete series from Portmarnock, Ireland.

*Variety 4. CONICA*, pl. XX, f. 5. *Shell conical; its height being nearly equal to its length; with strong, radiating, blunt, rounded ribs, protruding but little beyond the margin, which is, in consequence, but slightly undulous.*

This variety prevails on the coast near Bamborough Castle, and on some rocks at Holy Island, Northumberland. It is also met with in other places of England and Ireland. I noticed it in the latter country near Balbriggan, and at Killough, County of Down.

2. *PATELLA VIRGINEA*, pl. XX, f. 1, 4, and 6.

*Patella virginea*, First Ed., pl. 37, f. 1, 4, and 6; Linn. Gmelin, 3711; *Patella tessulata*, Müller, Zool. Dun., pl. 12, f. 4, 5; Forbes, p. 36; Maton and Rackett, p. 234; Brown, Ency. Brit., p. 466; Ib., Wernerian Mem., p. 533; Fleming, p. 287; *Patella parva*, Da Costa, p. 7, pl. 8, f. 11; Donovan, pl. 21, f. 2; Montagu, p. 480; Turton, Brit. Fau., p. 197.

Shell thin, oval, subconic, subdepressed; generally covered with a grayish epidermis; beneath which the surface is generally beautifully radiated with alternately broad and narrow pale brownish-red or pink, frequently commingling in a catinated manner, sometimes only visible near the margin; longitudinally striated, and crossed concentrically with nearly obsolete wrinkles; vertex acute, situate nearest one end; inside smooth, glossy, of a rosy or purple hue, and in some instances white. Length upwards of three-eighths of an inch; breadth a quarter of an inch; height not quite so much. It is found but rarely half an inch long.

A local species, found in Falmouth Harbour, Whitesand Bay, Cornwall; Salcomb Bay, Devonshire; the coasts of Northumberland and Durham; the Friths of Forth and Clyde; the Manx coast; and several shores of Ireland, as Dublin Bay, Portmarnock, Lough Strangford, and Cove of Cork.

This shell has much the aspect of the following species, but differs in the margin being much broader, the whole shell being much more oblong, in the valves being longer in proportion to their breadth, and also in being more elevated in the middle than that shell.

Found at Newhaven, Mid Lothian, adhering to an oyster, by General Bingham. The late Rev. Dr. Goodall, Provost of Eton College, found this very elegant species at extreme low water-mark, on a stone at Tor Abbey rocks. In his specimen the valves were of a dark liver-coloured brown, with a double spot of pale green on each; the transverse striæ, which produce the shagreened appearance, were exceedingly minute. He had mistaken it for the *C. lævis*. The magnificent specimen from which fig. 15 as well as fig. 12 were drawn, were discovered at Oban, Argyshire, and presented to me by my late friend Captain Charles Carmichael, an accurate and zealous naturalist.

6. CHITON RUBER, pl. XXI, f. 6 and 9.

*Chiton ruber*, First Ed., pl. 35, f. 6 and 9; Lowe, Zool. Journ., II, p. 101, pl. 5, f. 2; Brown, Ency., p. 401; Forbes, p. 37.

Shell carinated; valves broad, quite smooth, polished, and shining, destitute of punctures or granulations, but with numerous, rather faint, irregular, transverse striæ, or lines of growth, which are more determinate on the sides of the valves, where they are longitudinal; margin broad, with irregularly granose, or farina-like dots; whole surface with bright reddish-brown, or burnt sienna-coloured clouds, spots, or undulations; marginal fringe of a light red-colour, and not very distinct; middle valves provided with two marginal teeth; first valve with nine teeth, and the terminal one with ten. Length three-eighths of an inch; breadth about a quarter.

Found in deep water in the Frith of Forth; on the coasts of Argyshire, Yorkshire, Northumberland, and Durham; and Lough Strangford, Ireland. It is a rare species.

7. CHITON MARGINATUS, pl. XXI, f. 3.

*Chiton marginatus*, First Ed., pl. 35, f. 3; Pennant, IV, p. 71, pl. 36, f. 2; Montagu, p. 1; Maton and Rackett, p. 21, pl. 1, f. 2; Brown, Wernerian Mem., II, p. 503; Ib., Ency. Brit., p. 403; Ib., Popular Ency., II, p. 378, pl. 17, f. 103; *Chiton cinereus*, Lowe, Zool. Journ., II, p. 99; Forbes, p. 37.

Shell a little carinated, ovoid; valves but slightly beaked; whole surface covered with regular, shagreen-like granulations; colour various, frequently dusky, or drab, and sometimes mottled; marginal ligament with five meal-like, irregular papilli, its edges with a minute fringe of a dusky brown-colour; the first valve with about ten marginal teeth, and the terminal one with twelve. Length about five-eighths of an inch; breadth three-eighths.

Found in deep water on many of the British coasts, namely, Devonshire, Dorsetshire; Friths of Forth and Clyde; and Dublin Bay, Ireland.

8. CHITON CINEREUS, pl. XXI, f. 18.

*Chiton cinereus*, First Ed., pl. 35, f. 18; Montagu, p. 3; Fleming, p. 289; Ib., Ency., p. 102; Brown, Ency. Brit., p. 402; Maton and Rackett, p. 22, pl. 1, f. 3; Forbes, p. 37.

Shell oval, broad in proportion to its length, the first and terminal valves broadly rounded; valves very slightly elevated in the centre, with blunted beaks; whole shell with fine, irre-

gular shagreen; margin with irregular, elevated papilli, and slightly fringed at the edge; whole surface, including the margin, of an uniform dusky ash-colour. Length somewhat more than a quarter of an inch; breadth not so much.

Found on the coasts of Weymouth and Poole, adhering to rocks and oysters; and has been met with in the Frith of Clyde.

9. CHITON FUSCATUS, pl. XXI, f. 17.

*Chiton fuscatus*, First Ed., pl. 35, f. 17.

Shell oval, of a dusky brown-colour; the valves but little elevated, and slightly pointed; their surface, as well as the marginal ligament,—which is very narrow,—covered with fine shagreen-like papilli; and the outer edges of the valves with longitudinal striæ; destitute of a fringe on the edge of the border. Length nearly three-quarters of an inch; breadth about five-eighths.

Found adhering to oysters in the Frith of Forth; and under stones, at very low water, at Crammond, Ireland.

10. CHITON ALBUS, pl. XXI, f. 2.

*Chiton Albus*, First Ed., pl. 35, f. 2; Montagu, p. 4; Maton and Rackett, p. 22, pl. 1, f. 4; Fleming, Brit. An., p. 290; Ib., Edin. Ency., p. 103; Brown, Ency. Brit., p. 402.

Shell oval, white; with the valves but little raised, short in proportion to their breadth, and very slightly pointed; whole surface covered with minute punctures; border rather dusky, with decussated striæ, producing a fine shagreen-like appearance, when viewed through a strong lens, and destitute of a fringe on its edge. Length three-eighths of an inch; breadth somewhat less.

Found on oysters in the Frith of Forth, and at Poole, Dorsetshire, and is invariably a deep water species.

11. CHITON ASELLUS, pl. XXI, f. 14 and 19.

*Chiton Asellus*, First Ed., pl. 35, f. 14 and 19; Ency. Meth., pl. 161, f. 12; Lowe, Zool. Journ., II, p. 101.

Shell subcarinated; valves slightly beaked, covered with moniliform, or chain-like granulations, disposed in the form of longitudinal, slightly oblique striæ; marginal ligament rather broad, with black, shagreen-like granulations, and provided with a slight fringe; the whole of the valves destitute of marginal teeth, but with their internal edges minutely crenulated, or granulose; colour variable, sometimes chocolate-brown, and at others olive-green. Length about three-eighths of an inch; breadth somewhat more than a quarter.

Lowe says, "in young specimens the posterior edges of the valves are dark brown, or black, which extends over about half the valve; in older shells this colour becomes deeper, and extends gradually over the whole of that part of each valve, which is covered by the preceding as the shell contracts in drying." Fig. 14 is a greatly magnified figure of a specimen, sent to me by Captain Carmichael, in which the valves are green, and the border brown.

This species is found near Oban, on the Argyshire coast.

12. CHITON ASELOIDES, pl. XXI, f. 21.

*Chiton Aselloides*, First Ed., pl. 35, f. 21.

Shell ovoid, carinated; valves with a slight beak, the first and terminal ones with eleven or twelve teeth, middle ones with two each; whole surface covered with minute, regular granulations, but not beaded as in the preceding species; margin black, with coarse raised granulations; fringe very short, and indistinct;

colour various, dark chocolate-brown, burnt terra-sienna, or yellowish-white, with clouds, streaks, or spots. Length not quite half an inch; breadth somewhat more than half its length.

This shell has much the general appearance of the former species, but its marginal teeth sufficiently characterise it as distinct.

Found at Oban and Appin, on the Argyleshire coast, but is very rare. The handsome specimen from which I drew fig. 21, was sent me by Captain Carmichael.

*Section III.—Marginal ligament smooth.*

13. CHITON LÆVIGATUS, pl. XXI, f. 1 and 16.

*Chiton latus*, First Ed., pl. 35, f. 1 and 16; *Chiton lævigatus*, Fleming, Edin. Ency., p. 103; Lowe, Zool. Journ., II, p. 103, pl. 5, f. 6, 7.

Shell oblong, broad, somewhat wider behind than before, and slightly carinated; valves smooth, shining, and beaked, with minute granulations; marginal ligament quite smooth, simple, with a very short and indistinct fringe; first valve with nine broad teeth, and the terminal one with eight broad teeth; colour generally dark reddish-olive, and mottled with a paler hue, in others approaching to dark slate-colour, and sometimes reddish-brown. Length somewhat more than an inch; breadth three-fifths of its length.

In the character of the marginal teeth, this shell approaches that of *C. ruber*.

Found by Mr. Lowe, at Oban, Argyleshire, on the under side of loose rocks, which are only uncovered at Spring tides, about fifty yards south of the Custom House, and also at Appin, by Captain Carmichael, who sent me the specimen from which fig. 1 was drawn. Fig. 16 was taken from a specimen found by my

late friend Mr. Hancock, of Newcastle-upon-Tyne, below Tyne-mouth Castle, in 1809; so that he was the discoverer of the species. It was found plentifully in Zetland and Loch Broom, by Dr. Fleming.

*Section IV.—Doubtful species.*

14. CHITON DISCORS.

*Chiton discors*, Maton and Rackett, p. 20; *Chiton septem-valvis*, Montagu, p. 3.

"With seven carinated valves, strongly beaked; the five middle ones divided transversely from the anterior base to the beak, the hinder compartment very fine shagreen, the other very smooth, or faintly striated transversely; the extreme valve at each end rufous-brown, the rest generally dark cinereous; beaks frequently rufous; margin moderately broad, and finely reticulated; shape of *C. lævis*. Length half an inch.

"Found in Salcomb Bay, but rare."—*Montagu*.

Whether this is a distinct species, it is difficult to determine; although I think in all probability it is, as well as the following species, *lusus naturæ*. Montagu, in his Supplement, says, "we are inclined to believe this an accidental variety of *C. marginatus*."

15. CHITON QUINQUEVALVIS, pl. XXI, f. 22.

*Chiton quinquevalvis*, First Ed., pl. 35, f. 22.

Shell oval, carinated, of a reddish-gray; with five considerably beaked valves, covered with strong, shagreen-like papilli; valves divided on each side by a deep groove, inclining obliquely from the flat edge towards the beaks, where the grooves terminate; margin rather broad, covered with extremely fine, irregular, shagreen-like papilli, with the edge ciliated. Length three and a half eighths of an inch; breadth three-eighths.

Found at Tenby, by General Bingham.



## CLASS SECOND.

### CONCHIFERA; OR BIVALVES.

Animals soft, without articulations, destitute of a head or organs of vision, and always fixed within a BIVALVE shell; provided with external branchiæ, a simple circulation, and an unilocular heart.

All the species are aquatic, living either in the sea or fresh water. None of the animals have an internal shell. The body is invariably soft, and the mouth is situated near the left side of the hinge.

#### SUB-DIVISION I.

Ligament none or unknown, or in its stead a tendinous chord, which supports the shell.

#### ORDER I.—MONOMYARIA.

Animals provided with but one muscle of attachment, or adductor muscle, which leaves one subcentral muscular impression inside of each valve.

#### FAMILY I.—BRACHIOPODA.

Shell bivalve, adhering to extraneous marine bodies, either by the shell itself, being in contact with them, or attached by a tendinous chord. Shells not quite equivalve, and open by a hinge.

#### GENUS 1.—TEREBRATULA.—Bruguière.

Shell inequivalve, equilateral, generally trigonal and gibbous; attached by a short peduncle to extraneous marine bodies; the larger, or upper valve, with a projecting umbo, frequently bent, and perforated at its apex, or notched at its inner edge, and having a small curved tooth on each side of its hinge, which fits into a corresponding pit in the opposite valve; the inside of the smaller valve is provided with two slender testaceous processes, which are sometimes simple, short, and recurved, at others considerably elongated, branched, bent in various directions, and anastomosing for the most part; sometimes they are situated near the centre of the valve, and in other instances are united by their points to the shell; these usually emanate from each side of the hinge; both valves are provided with two nearly obsolete, muscular impressions, but sometimes they are strongly developed; those of the larger, or perforated valve, are oblong, central, and close to each other; in the smaller valve they are triangular, with their angles rounded, also nearly central, but more distant than in the other valve.

##### 1. TEREBRATULA CRANIUM, pl. XXII, f. 10, 11, 12.

*Terebratula cranium*, First Ed., pl. 34, f. 10, 11, 12; Müller, Prod., p. 249; Ib., Zool. Dun., pl. 84, f. 1; Fleming, Phil. Zool., II, p. 498, pl. 4, f. 4; Ib., Brit. An., p. 368; *Terebra-*

*tula vitrea*, Fleming, Edin. Ency., VII, p. 96; Montagu, Linn. Trans., p. 288, pl. 13, f. 2 B; *Anomia cranium*, Brown, Ency. Brit., VI, p. 422; Turton, Biv., p. 236.

Shell ventricose, front margin slightly truncated, semitransparent, brownish-white, with the external surface finely and delicately shagreened, which can only be seen by the aid of a strong lens, and slightly and irregularly wrinkled concentrically; larger valve with bifid lateral teeth; those of the smaller valve, with a small, horizontally projecting tooth, from which emanate two projecting processes, upwards of three-fourths across the shell; provided with a simple peduncle.

Found in deep water at Bressay, Zetland, by Dr. Fleming; and a single specimen was dredged alive in Dublin Bay, which is now in the Museum of the Dublin Society.

##### 2. TEREBRATULA AURITA, pl. XXII, f. 13, 14, 15.

*Terebratula aurita*, First Ed., pl. 34, f. 13, 14, 15; Fleming, Phil. Zool., II, p. 498, pl. 4, f. 5; Ib., Brit. An., p. 369; *Terebratula costata*, Lowe, Zool. Journ., II, p. 105, pl. 5, f. 8, 9.

Shell rather thin, semitransparent, and compressed; narrow at the summit, suddenly widening as it descends, and terminating in a well rounded basal margin; upper valve flattish, semicordate, and inequilateral; beak slightly produced, a little rounded, and horizontally truncated, for the reception of the perforation, which is large, and completed by the pointed umbo of the lower, or smaller valve; lower valve somewhat rounded, a little depressed, with a slight central elevation; both valves covered externally with regular, longitudinal, divergent, somewhat scabrous ribs, which are interrupted by a few irregular, inequidistant lines of growth, producing a scaly or vaulted appearance; margin of the valves regularly rounded and toothed, but destitute of any sinuosity; colour an obscure reddish-brown towards the beaks, which becomes less intense as it diverges towards the margins; inner surface minutely punctated, pale yellowish, or cream-coloured white; peduncle short, consisting of numerous, unequal, tubular filaments, attached to a complicated tendino-muscular apparatus, and chiefly to the lower valve. Length somewhat more than three-tenths of an inch; breadth rather less.

Discovered by M. J. Berkeley, Esq., attached to the under side of a rock, on the beach near the Custom House, Oban, at a very low tide. A specimen was sent to me, from the same locality, by Captain Carmichael; and Dr. Fleming found it in Ullapool, Loch Broom.

##### 3. TEREBRATULA PSITTACEA, pl. XLVI, f. 2, 3, 4.

*Terebratula psittacea*, First Ed., pl. 10,\* f. 2, 3, 4; Turton, Conch. Dict., p. 5, pl. 11, f. 42; Ib., Brit. Biv., p. 236.

Shell oval, convex, of a dark horn-colour; beaks greatly produced, and curved; superior margin undulated; sides abruptly turned inwards, depressed, and provided with a few longitudinal striæ; front margin somewhat indented on both sides, and pro-

duced in the middle; whole surface invested with fine longitudinal, divergent striæ; perforation a little triangular. Length nearly an inch and a quarter; breadth one inch.

This specimen was cast ashore at Teignmouth.

It is doubtful whether this is a true British species.

#### GENUS 2.—ORBICULA.—Cuvier.

Shell inequivalve, nearly orbicular, compressed; generally irregular in form, adherent, flat, and attached by means of a fibrous substance, passing through an orifice near the centre of the lower valve; upper valve patelliform, its vertex posterior, or nearly central; each valve provided with four muscular impressions, two of which are large, approximate, and situate near the centre, and two smaller and more distant, placed near the posterior margin; those of the lower valve not so well defined as the others; contiguous to the inner extremity of the orifice there is an obtuse testaceous process; destitute of hinge teeth, or a ligament.

1. *ORBICULA NORVEGICA*, pl. XXII, f. 9, and pl. XX, f. 21, 22.

*Orbicula Norvegica*, First Ed., pl. 37, f. 21, 22, and pl. 34, f. 9; Lamarck, VI, pt. 1st, p. 242, G. B.; Sowerby, Linn. Trans., XIII, p. 468, pl. 26, f. 2; Stark, Elem. Nat. Hist., II, p. 75; *Discina Ostreoides*, Lamarck, VI, pt. 1st, p. 237; Fleming, Brit. An., p. 376; Stark, Elem. Nat. Hist., p. 76; Turton, Brit. Biv., p. 238; *Patella anomala*, Müller, Zool. Dun., I, p. 14, pl. 5, f. 1 to 7; *Patella distorta*, Fleming, Edin. Ency., VII, p. 65, pl. 204, f. 4; Montagu, Linn. Trans., XI, p. 195, pl. 13, f. 5.

Shell subquadrangular, somewhat irregular in shape, and rugged in the margin; upper valve patelliform, convex, concentrically wrinkled by the lines of growth, with a wart-like subcentral protuberance; of a dull yellowish-brown colour; under valve quite flat, very thin, and adhering its whole circumference to submarine stones, and other substances; inside bluish-white, and minutely granulated; furnished with four muscular impressions.

Found in deep water at Zetland, and is not uncommon in the Clyde, particularly in Rothesay Bay.

#### FAMILY II.—OSTRACEA.

Ligament placed either interiorly, or nearly so; shell irregular in form, foliaceous, and sometimes papyraceous.

SUB-DIVISION I.—Ligament placed interiorly; shell thin, papyraceous.

#### GENUS 3.—ANOMIA.—Linnæus.

Shell inequivalve, irregular, operculated; under valve flattened, with a large circular or ovate perforation near the hinge, with its edges turned back, through which protrudes a testaceous, or bony, straight, elliptical operculum or plug, with a dilated base, by which the shell adheres to extraneous bodies; upper valve the larger, concave, and entire; ligament large, transverse, internal, and placed within the upper valve, at the umbo, and to a prominent, expanding appendage in the depressed valve; lower valve with a single, orbicular, nearly central, muscular

impression; upper valve with three impressions, situate contiguous to each other, the largest is next the base of the shell, which is connected by means of its muscle with the plug, and the other two are also connected, by the medium of their muscle, with the single impression in the lower, or flattened valve.

1. *ANOMIA EPHIPIUM*, pl. XXII, f. 1 and 4.

*Anomia Ephippium*, First Ed., pl. 34, f. 1 and 4; Linné, p. 1150; Lamarck, VI, pt. 1st, p. 226; Pennant, p. 109, pl. 62; Montagu, p. 155; Donovan, I, pl. 26; Maton and Rackett, p. 102; Brown, Ency. Brit., p. 422; Ib., Ency. Edin., p. 548, pl. 54, f. 3; Ib., Wernerian Mem., p. 514; Fleming, p. 395; Ib., Edin. Ency., p. 98; Forbes, p. 38; Turton, Biv., p. 227, pl. 18, f. 1, 2, 3.

Shell suborbicular, subpellucid, irregularly waved and wrinkled; generally of a pale yellowish-white on the outside, and of a shining pearly lustre within, reflecting various hues, according to the play of light; one valve convex, the other flat, with a pretty large perforation near the hinge, through which protrudes a thick testaceous plug, by which the shell is affixed to extraneous bodies.

This species is not uncommon in our seas, attached to oysters and other extraneous bodies; often assuming the form of the substance to which it is attached. Very curious specimens are frequently found adhering to the *Pecten opercularis* and *Pecten maximus*; these take the impression of the ribs and markings of those species, and produce a very beautiful appearance.

The *A. Ephippium* abounds in Lough Strangford, Ireland, of a very large size, adhering to Oysters.

2. *ANOMIA UNDULATA*, pl. XXII, f. 2, 3.

*Anomia undulata*, First Ed., pl. 34, f. 2, 3; Linn. Gmelin, p. 3346; Montagu, p. 157 and p. 580, pl. 4, f. 6; Ency. Meth., pl. 184, f. 5, 6; Maton and Rackett, p. 103; Fleming, Brit. An., p. 395; Ib., Edin. Ency., p. 98; Brown, Ency. Brit., p. 422, pl. 153, f. 9; Ib., Wernerian Mem., p. 514; Ib., Conch. Text Book, p. 110, pl. 14, f. 2; Forbes, p. 39; Turton, Brit. Biv., p. 230; *Ostrea striata*, Da Costa, p. 162, pl. 11, f. 4; Donovan, pl. 45.

Shell strong, flat, sometimes thin, and pellucid; generally of a suborbicular, or slightly elongated form; external surface with numerous, strong, rib-like striæ, emanating at the small, pointed, flattened umbo, which is placed a little within the margin, and radiating towards the sides and base of the shell, which is generally slightly crenulated; upper valve a little rounded; lower valve flat, with a very large, oblong-ovate perforation, destined for the passage of a testaceous plug, by which the animals adhere to marine bodies, on one side of which is a triangular concave space, finely striate; outside dirty green; inside almost always of a clear glossy green, which is more intense towards the centre; margin of a bluish, iridescent hue; the plug terminates in a thin oval layer, strongly striated transversely, and crossed by fine longitudinal lines.

Found on stones, shells, &c., within low water-mark, on many of our shores; we may particularise South Devon, Salcomb Bay, rocks at Torbay, the Frith of Forth; Callina Bay and Rathgar-mont, Lough Strangford, Ireland.

3. *ANOMIA SQUAMULA*, pl. XXII, f. 5.

*Anomia squamula*, First Ed., pl. 34, f. 5; Pennant, p. 109, No. 71; Da Costa, p. 167; Montagu, p. 156 and p. 561;

Maton and Rackett, p. 102; Lamarck, VI, pt. 1st, p. 228; Fleming, p. 395; Brown, Ency. Brit., p. 422; Ib., Wernerian Mem., p. 514; Turton, Biv., p. 229, pl. 18, f. 5, 6, 7; Forbes, p. 38.

Shell suborbicular, smooth, thin, membranaceous, and transparent, generally much compressed; convex valve a little thickened; flat valve very thin, with a large perforation, for the size of the shell; outside dull yellowish-white, with very indistinct, concentric wrinkles, or lines of growth, which can only be seen by the aid of a strong lens; inside white, with pale iridescent reflections; plug tendinous, very seldom hard at the base, with the termination testaceous; umbones small, flat, and pointed.

Common on all the British and Irish coasts, adhering to shells, stones, and *Fuci*.

4. *ANOMIA ACULEATA*, pl. XXII, f. 6.

*Anomia aculeata*, First Ed., pl. 34, f. 6; Gmelin, Syst., p. 3346; Müller, Zool. Dan. Prod., p. 3005; Montagu, p. 157, pl. 4, f. 5; Fleming, Edin. Ency., p. 98; Ib., Brit. An., p. 396; Brown, Ency. Brit., p. 422; Ib., Wernerian Mem., p. 514; Maton and Rackett, p. 103; Turton, Biv., p. 233.

Shell thin, compressed, orbicular, or slightly oblong; with numerous raised, divergent, interrupted striæ, which are surmounted with many small concave, obtuse murications, or spines; umbones small, turning a little downwards; upper valve convex; under valve quite flat and smooth, but sometimes provided with small murications towards the margin; perforation of medium size, and situate near the hinge; generally of a pale dull brown, or cream-white; inside white, and slightly pearly.

Found on many of our coasts, adhering to the roots of *Algæ*, stones, the legs of crabs, &c.

5. *ANOMIA CYLINDRICA*, pl. XXII, f. 7, 8.

*Anomia Cymbiformis*, First Ed., pl. 34, f. 7, 8; Maton and Rackett, Linn. Tr., VIII, p. 104, pl. 3, f. 6; Fleming, Edin. Ency., p. 98; *Anomia cylindrica*, Schröeter, p. 3, pl. 9, f. 9; Brown, Ency. Brit., p. 422; Fleming, p. 395; Turton, Biv., p. 232; Forbes, p. 39.

Shell oblong-oval, convex, somewhat cylindrical; beaks recurved, narrower towards the umbones; upper valve convex, and curving over the under one, which is concave and smooth; surface of upper valve dull brown, with a few transverse, obscure wrinkles. Length half an inch; breadth a quarter.

Inhabits many of our coasts, adhering to *Fuci*, *Sertularia*, &c.

6. *ANOMIA ELECTRICA*, pl. XLVI, f. 5.

*Patella pellucida*, First Ed., pl. 10,\* f. 5; Brown, Wernerian Mem., II, p. 514; *Anomia electrica*, Linné, Syst., p. 1151; Chemnitz, VIII, p. 79, pl. 76, f. 691; Turton, Biv., p. 226, pl. 17, f. 8, 9.

Shell orbicular, very thin, pellucid, slightly wrinkled concentrically; umbo small and margined, below which is a chalky-like spot, of a roundish shape; upper valve very convex; under valve very flat, with an extremely large interrupted perforation; whole shell of a bright amber-colour. Diameter about an inch.

I first found this species at Color Cots, near Tynemouth, and afterwards at Dublin Bay and Portmahonck, Ireland.

7. *ANOMIA CEPA*, pl. XXXIX, f. 12.

*Anomia cepa*, Linné, Syst., p. 1151; Chemnitz, VIII, p. 85, pl. 76, f. 694, 695; Turton, Biv., p. 229, pl. 18, f. 4, young.

Shell generally oblong, suboval, compressed, and rough externally, but not undulating; beaks terminal; under valve thin, but not scaly; yellowish fawn-coloured externally, and rosy red within. Length nearly two inches; breadth one and a half.

Young shells are somewhat triangular, with their sides obtusely cut down.

Found by Dr. Turton, near Broadsands, Torbay, at the very lowest Spring tide.

8. *ANOMIA PUNCTATA*, pl. XXXIX, f. 13.

*Anomia punctata*, Gmelin, Syst., p. 3346; Chemnitz, VIII, p. 88, pl. 77, f. 698; Turton, Biv., p. 231, pl. 18, f. 11.

Shell orbicular; beaks terminal; upper valve convex, covered with numerous raised dots; under valve flat, with small and numerous punctures; base somewhat truncated. Diameter about an inch.

Found on crabs and shells, on the south coasts of England.

9. *ANOMIA FORNICATA*, pl. XXXIX, f. 14, 15.

*Anomia fornicata*, Lamarck, VI, pt. 1st, p. 228; Turton, Biv., p. 234, pl. 18, f. 12, 13.

Shell dirty white, somewhat orbicular, compressed, finely striated; upper valve convex, provided with a vaulted chamber near the back; hinge pointed, and nearly terminal; sides near the margin irregularly sinous, with numerous, very fine, radiating striæ, and with fine, regular, transverse striæ near the hinge; under valve flat, with the perforation round, and nearly closed; inside of a silvery metallic lustre; margin provided with fine, longitudinal striæ, the hollow vaulted chamber, which is considerably curved on one side, and scaly externally. Diameter about half an inch.

Found at Torbay.

10. *ANOMIA STRIOLATA*.

*Anomia striolata*, Turton, Biv., p. 233.

Shell oval, somewhat cylindrically convex, and longitudinally striate, with recurved beaks.

Dr. Turton says this shell resembles the *A. cylindrica*, in all respects, "but is always marked with fine, rather remote, longitudinal raised lines."

Found in the roots of *Fuci*.

11. *ANOMIA TUBULARIS*.

*Anomia tubularis*, Turton, Biv., p. 234.

Shell cream-white, orbicular, with the perforation of the under valve entire all round, and forming a raised cylindrical tube; beak terminal; plug tendinous.

Found attached to *Fuci*.

The two latter shells are very doubtful species; they are given on the authority of Turton.

GENUS 4.—OSTREA.—Linnæus.

Shell inequivalve, irregular, and foliaceous; umbones somewhat separated, and of unequal size; lower valve largest, concave, and frequently adherent; upper valve smaller, and somewhat plain; hinge destitute of teeth; ligament partly external; the facet to which it is attached is subtrigonal, tripartite, and divided by two elevated lines, which divaricate from the umbo; each valve provided with two muscular impressions, the one large, suborbicular, and nearly central, the other very small, and situate near the hinge.



1. *OSTREA EDULIS*, pl. XXIII, f. 19, and pl. XXX,\* f. 6, 7.

*Ostrea edulis*, First Ed., pl. 31, f. 19; Linné, Syst., p. 1148; Lamarck, VI, p. 205; Pennant, p. 102, pl. 62, f. 70; Da Costa, p. 154, pl. 11, f. 6; Montagu, p. 151.

Shell suborbicular, rugged, foliaceous, the folds lying over each other in irregular order; the points of the umbones apart from each other; lower valve largest, and more concave than the upper one; valves closed all round; the external foliations frequently in the form of divergent, longitudinal, irregular, interrupted ribs, and sometimes irregularly and transversely striate; margins of the valves slightly undulated; outer surface of a dull brown colour; inside white.

This shell is liable to great variety, both in size and form; those found at Carrickfergus, in Ireland, are very large and ponderous, generally measuring seven inches and upwards in diameter; while at Carlingford and Milford they are very small. They inhabit many of the coasts around Britain and Ireland.

Fig. 19, pl. XXIII, is from the Frith of Forth; it is a *lusus*, with a singular prolongation of the hinge.

Fig. 6, 7, pl. XXX,\* is from Milford, and is the ordinary size of that locality; this variety is provided with a row of teeth-like processes, diverging on each side of the umbo, which is rather acute and triangular.

2. *OSTREA PARASITICA*, pl. XXIII, f. 20, 21.

*Ostrea parasitica*, Chemnitz, VIII, p. 19, pl. 71, f. 660; Turton, Biv., p. 205, pl. 17, f. 6, 7; Fleming, p. 392.

Shell small, thin, longitudinal, seldom exceeding two inches; of a drab or greenish-brown colour; sometimes with radiations of black or brown; beaks generally incurved; surface usually smooth; inside white, with slight pearly reflections.

This species is invariably attached to other bodies, and subject to great variety in form, depending upon the substance to which it is fixed. It is met with on some coasts adhering to stones, rotten wood, &c., near low water-mark. I found several specimens attached to a piece of rotten wood, at Hull. I do not believe that all the young of the *O. edulis* are parasitical, as some authors imagine.

### FAMILY III.—PECTINIDES.

Shell generally regular, and not foliaceous; ligament placed interiorly, or partly so.

#### GENUS 5.—PECTEN.—Bruguière.

Shell inequilateral; the under valve generally more convex than the upper one; subequilateral, with many grooves or ribs, radiating from the umbones to the margins; provided with two auricles, which are, for the most part, irregular in size, close below one of them in the upper valve is a small notch for the passage of the lyssus; muscular impression large, placed somewhat to one side; pallial impression destitute of a sinus; hinge linear, without teeth; ligament consisting of three portions, of which the two lateral parts are elongated, and follow the hinge line, the third portion thick and triangular, and fitted into a triangular shallow pit within the hinge.

#### Section I.—One valve flat, the other deep and convex.

1. *PECTEN MAXIMUS*, pl. XXV, f. 1.

*Pecten maximus*, First Ed., pl. 32, f. 1; Lamarck, VI, p. 163; Montagu, p. 143; Fleming, p. 383; Turton, Biv., p. 207; Forbes, p. 39; *Ostrea maxima*, Pennant, IV, p. 99, pl. 59, f. 61; Donovan, pl. 49; Brown, Wernerian Mem., II, p. 513; Ib., Ency. Brit., p. 417.

Shell suborbicular; upper valve convex; the under flat, shorter than the other one, and depressed near the umbo, in which situation the ribs are nearly obsolete, and devoid of striæ; each valve provided with fourteen or fifteen rounded, gently undulating, divergent ribs, with obsolete ones on both sides; the whole of which, together with the interstices, are covered with very strong, irregular, divergent striæ; entire surface invested with fine, concentric, undulating striæ, and inequidistant, remote lines of growth; provided with two nearly equal, rectangular auricles, covered with narrow, rather close, rounded, diagonal ribs, these are crossed by numerous, thick-set, undulating, longitudinal striæ, and inequidistant lines of growth; whole surface of a reddish-brown colour; inside white, with flattened, broad ribs, and a rufous-brown, very broad, ill defined fillet round the margin, which is very slightly scalloped. Length five inches; breadth six inches.

Found in deep water on many of the British coasts, namely, Dorsetshire, Devonshire, and Northumberland; Dublin Bay, Portmarnock, Lough Strangford, and Bray, Ireland.

2. *PECTEN JACOBÆUS*, pl. XXIV, f. 5.

*Pecten Jacobæus*, First Ed., pl. 33, f. 5; Lamarck, VI, p. 163; Turton, p. 207; Pennant, IV, p. 100, pl. 60, f. 62; Fleming, p. 383; Montagu, p. 144; *Ostrea Jacobæa*, Donovan, pl. 137; Brown, Ency. Brit., p. 417.

Shell with seventeen or eighteen very convex, divergent ribs; the upper valve flat, rufous, with rounded ribs, and a smooth whitish depression near the umbo, in which situation the ribs are nearly obsolete; under valve very convex, pure white, pale brown, or flesh-coloured; ribs angulated, rising abruptly at the sides, and gently rounded on the surface, the interstices with strong, inequidistant, longitudinal furrows, usually three to each rib, the central one being considerably broader than the others, and crossed by fine transverse striæ; auricles equal, rectangular, with nearly obsolete, diagonal ribs, two or three of which are stronger towards the hinge line, or top of the auricles, these are crossed by extremely fine, somewhat irregular, waved striæ, and striated; inside white, slightly tinged with a reddish hue near the margin, which is scalloped. Length three inches; breadth four inches; but is found much larger in the Bay of Naples, and other continental localities.

Dredged in deep water off Poole and Weymouth, Dorsetshire; Cornwall; and at Scarborough, Yorkshire. It is, however, a very rare British species.

#### Section II.—Both valves convex, and equal in size; auricles unequal.

3. *PECTEN OPERCULARIS*, pl. XXIV, f. 1.

*Pecten opercularis*, First Ed., pl. 33, f. 1; Linné, Syst., p. 1147; Lamarck, VI, p. 172; Montagu, p. 145; Turton, Biv.,

p. 209; *Pecten subrufus*, Pennant, p. 100, pl. 60, f. 63; *Ostrea subrufus* and *Ostrea opercularis*, Donovan, pl. 12; Brown, Wernerian Mem., II, p. 513; Maton and Rackett, p. 98.

Shell slightly oblique, suborbicular, with about twenty rounded, divergent ribs; whole surface covered with strong, longitudinal, and fine transverse, undulating striæ; under valve somewhat more convex than the other; auricles nearly equal, with very narrow, divergent ribs, and finely striated longitudinally; colour various, yellow, orange, brown, beautifully clouded and variegated with different shades; inside white, frequently tinged with pink or lilac, with the ribs and furrows strongly marked; margins deeply scalloped; base of the auricles terminating externally in an elevated, tooth-like process; above which, on the larger ear, are a few fine, short denticles; hinge margin nearly parallel, turned inwards in the upper valve, serving as a fulcrum for the hinge line of the opposite valve, which is so much shorter than the upper valve; umbones sharp pointed. Diameter about two inches and a half.

4. PECTEN ISLANDICUS, pl. XXIV, f. 3.

*Pecten Islandicus*, First Ed., pl. 33, f. 3; Chemnitz, VII, p. 314, pl. 65, f. 615, 616; Lamarck, VI, p. 174; Turton, Biv., p. 216; *Ostrea cinnabarina*, Dillwyn, Cat., p. 256; Brown, Ency. Brit., p. 418.

Shell oblong, narrow above, and widely expanded below; with about fifty narrow, slightly elevated ribs, with a groove in the centre of each, the intervening furrows provided with a narrow, single, less elevated rib; the whole of the ribs covered with obtuse, imbricated scales; colour varying from yellowish-orange to cinnabar-red, and dark brown.

Dead shells of this species are common in the Clyde and Kyles of Bute, but we only once met with a pair of valves united. Large specimens, measuring four inches and a quarter in length, were obtained by Henry Gore Booth, Esq., in the north end of the West Kyle.

5. PECTEN VARIUS, pl. XXIV, f. 4.

*Pecten varius*, First Ed., pl. 33, f. 4; Linné, Syst., p. 1146; Chemnitz, VII, pl. 66, f. 633, 634; Pennant, IV, p. 101, pl. 61, f. 64; Montagu, p. 146; *Ostrea varia*, Maton and Rackett, p. 97; Donovan, pl. 1, f. 1; Brown, Wernerian Mem., II, p. 513; Ib., Ency. Edin., p. 54, pl. 53, f. 14.

Shell elongated, with about twenty-eight sharp, narrow echinated ribs; under valve more convex than the upper one; auricles very unequal, diagonally ribbed, and longitudinally striated, the larger one in the superior valve is much wrinkled; whole surface covered with nearly equidistant, rough, concave spines, which are, however, less numerous towards the umbones; sometimes the spines on the ribs are superceded by imbrications, and only slightly echinated towards the sides of the valves; beneath the longer ear of the upper valve are a few teeth-like processes, at which part there is a hiatus betwixt the valves; whole surface variously coloured, sometimes clouded with dark purplish-brown, burnt umber-brown, yellow, or orange; inside coloured like the exterior, but the tones more subdued. Length two inches and a quarter; breadth two inches.

Sometimes shells of this species are quite plain, varying in colour from deep orange to dark purplish-brown, sometimes pure white.

This species is not uncommon on most of the coasts of Britain and Ireland.

6. PECTEN NIVIVS, pl. XXII, f. 16.

*Pecten nivivus*, First Ed., pl. 34, f. 16; Macgillivray, Phil. Journ., XIII, p. 166, pl. 3, f. 1; Fleming, p. 384.

Shell oblong; ears unequal; with forty-two rounded ribs, provided with a few scaly spines; the intermediate furrows crossed with numerous, transverse striæ; external surface of a uniform cream-white; inside snow-white.

Discovered on the shores of Harris, one of the Hebrides, by Professor Macgillivray.

7. PECTEN NEBULOSUS, pl. XXII, f. 17.

*Pecten nebulosus*, Brown, Report Brit. Association for 1834; Ib., Edin. Journ. Nat. Hist., I, p. 9, f. 1.

Shell nearly circular, the umbones acute; with seven broad, flat, unequal, divergent ribs; auricles unequal; external surface of both valves covered with very fine, parallel, longitudinal striæ, and also with very minute, undulating, transverse striæ, which are hardly discernible to the naked eye, but feel rough to the touch; both valves somewhat inflated towards their base, with a series of longitudinal, densely-set ribs, and the basal margins finely crenulated two-thirds of the breadth of the shell; upper, or convex valve, of a uniform rich reddish-brown, irregularly clouded with white; under valve generally ash-coloured, and immaculate; inside bluish-white, of a pearly lustre, exhibiting iridescent reflections. Length one inch and seven-eighths; breadth the same.

First found at Largs, mouth of the Clyde, by Mr. John Blythe, of Glasgow. It has since been found in Loch Fine, by Mr. Drew, Writer, Inverary; and I obtained it from Miss Helen Carmichael, who found it on the shores of the larger Comrie Island, Frith of Clyde. I also met with it, by dredging, off Rothesay.

8. PECTEN OBSOLETUS, pl. XXIV, f. 6.

*Pecten obsoletus*, First Ed., pl. 33, f. 6; Pennant, IV, p. 102, pl. 61, f. 66; Montagu, p. 149; Donovan, pl. 1, f. 2; Fleming, p. 385; Turton, Biv., p. 213; Forbes, p. 40; *Ostrea obsoleta*, Maton and Rackett, p. 100; Brown, Wernerian Mem., II, p. 514.

Shell nearly orbicular, rather compressed; with unequal auricles, the one large and striated, the other very small; whole surface covered with numerous, fine, longitudinal striæ, some of which are more prominent than the others, and placed at irregular distances; variously coloured, sometimes of a uniform reddish-brown, or flesh-colour, at others clouded with dark purple, or brown; inside smooth, white, or pale lilac, sometimes of a brownish cast.

Not uncommon in the British and Irish seas.

9. PECTEN LÆVIS, pl. XXIV, f. 7.

*Pecten lævis*, First Ed., pl. 33, f. 7; Pennant, IV, p. 102; Montagu, p. 150, pl. 4, f. 4; *Ostrea lævis*, Maton and Rackett, p. 100, pl. 3, f. 5; Brown, Ency. Brit., p. 418.

Shell suborbicular, valves nearly equal, compressed, thin, subpellucid; quite smooth, with the exception of a few concentric indications of lines of growth; auricles longitudinally striated, and decussated with very fine striæ; ears unequal; colour various, pink, reddish-yellow, or pale orange; inside glossy, bluish-white. Length six-eighths of an inch; breadth not quite so much.

Found at Anglesey, by Pennant; Montagu met with it at Falmouth and Salcomb Bay, Devonshire; and I found it on the Durham coast.

It is doubtful whether this is not a mere variety of *P. obsoletus*, in the young condition.

10. PECTEN SINUOSUS, pl. XXV, f. 2.

*Pecten sinuosus*, First Ed., pl. 32, f. 2; Fleming, p. 384; Lamarck, IV, p. 175; Turton, Biv., p. 210, pl. 9, f. 5; Forbes, p. 40; *Ostrea sinuosa*, Maton and Rackett, p. 99; Brown, Wernerian Mem., p. 514; Ib., Ency. Brit., p. 418; *Ostrea pusio*, Pennant, p. 101, pl. 41, f. 65; Donovan, pl. 34.

Shell ovate, with numerous, divergent ribs, of unequal thickness; under valve convex, adherent, and much distorted, from its partaking of the form of the substance to which it adheres, by which the whole of the ribs are, in general, obliterated, except towards the umbo; upper valve more flat than the inferior, and more or less sinuous like the opposite valve; its whole surface is covered with foliated, spinous, or scaly ribs, but these are interrupted by the transverse swellings and depressions which traverse it, these distortions frequently giving an undulated appearance to the ribs; auricles large, in many specimens nearly equal, in others they are small and irregular; colour variable, sometimes reddish-brown, orange, or yellow, and other specimens are mottled and clouded with white. Length two inches; breadth an inch and a half.

Found on many of the English and Irish coasts.

11. PECTEN SPINOSUS, pl. XXIV, f. 8.

*Pecten spinosus*, First Ed., pl. 33, f. 8; *Pecten pusio*, Turton, Biv., p. 215, pl. 17, f. 2; Fleming, p. 385; *Hinnites pusio*, Sowerby, Zool. Journ., III, p. 71.

Shell oblong-ovate, with about forty-two alternately higher and lower ribs, thickly set with vaulted spines, and longitudinally striated; ears very unequal in size, and obliquely ribbed and spinous; beneath the superior ear are five tooth-like laminae; upper valve less convex than the lower; colour various, being plain yellow, orange, or brown, and sometimes clouded with brown or chocolate-colour. Length three and a half eighths of an inch; breadth somewhat more than two and a half eighths.

I first found this on the Herd Sands, at South Shields; W. C. Trevelyan, Esq., met with it at Seaton. It also occurs at Eyemouth, Berwickshire; and was found at Torbay, by Turton.

This species has much the aspect of the young of *P. varius*, but will at once be distinguished by its more elongated form, and in the ribs being alternately higher and lower.

12. PECTEN JAMESONI, pl. XXV, f. 7.

*Pecten Jamesoni*, Forbes, Wernerian Mem., VIII, p. 58, pl. 2, f. 1.

Shell subequivalve, suborbicular, with longitudinal, undulated plaits, striated; the plaits four or five; ears unequal. Length and breadth three-quarters of an inch.

"Allied to the *Pecten polymorphus* of Bronn (Phillippi, p. 79, tab. V, f. 18, 21), but differs in several respects, especially in the inequality of the auricles. The longitudinal striæ vary much in coarseness; the upper valve is somewhat larger than the lower; the auricles are ribbed and striated by lines of growth; the longitudinal ribs or folds vary much in convexity,

and are sometimes acutely carinated. The colour is white, with a tinge of red, especially near the beaks. Very distinct from any recorded British species."—*Forbes*.

Dredged at Bute, by James Smith, Esq., of Jordan Hill.

13. PECTEN LANDSBURGI.

*Pecten Landsburgi*, Forbes, Wernerian Mem., VIII, p. 58, pl. 2, f. 2.

Shell subequivalve, suborbicular, radiated with very small, longitudinal, rugose striæ, and crossed by regular, undulating, transverse striæ; auricles unequal. Length half an inch; breadth five-twelfths.

"A very beautiful species, allied to *Pecten obsoletus*, first observed by the Rev. Mr. Landsborough, on the coast of Ayrshire, afterwards dredged by Mr. Smith, off the coast of Bute. In colour it resembles *Pecten obsoletus*, but is somewhat more triangular in form; from that species, however, it is easily distinguished by the lineations of its surface, which is adorned by numerous regular minute rays rugosely striated, and crossed by regular undulated transverse, somewhat distant striæ. The rays on the upper surface are furnished with short, broad, obtuse spines, crowning the convex flexure of the undulated striæ; the spines only exist towards the margin on the lower valve. The rugose appearance of the longitudinal striæ is caused by the interstices being punctate."—*Forbes*.

14. PECTEN GLABER, pl. XXV, f. 3, 4.

*Pecten glaber*, First Ed., pl. 32, f. 3, 4; Pennant, IV, p. 102, No. 68; Montagu, Sup., p. 59, pl. 28, f. 6; Fleming, p. 384.

Shell rather compressed, nearly smooth, with extremely minute, concentric striæ, visible only by the aid of a strong lens; with seven nearly obsolete, rounded ribs, and intermediate longitudinal striæ; surface mottled with reddish-brown and yellow, sometimes plain; ears large, nearly equal, the one reticulated, the other only striated; inside with twenty-one slender rays, the sixteen middle ones arranged in fours, the two middle series approximating, filling the intervening hollows between the outer sulci; inside same colour as the outside, but paler, except near the hinge. Length three-quarters of an inch; breadth somewhat less.

Found at Anglesey, by Pennant, and in the Frith of Forth, at Dunbar, by Captain Laskey.

15. PECTEN SIMILIS, pl. XXV, f. 5, 6.

*Pecten similis*, First Ed., pl. 32, f. 5, 6; Laskey, Wernerian Mem., I, p. 387, pl. 8, f. 8; Fleming, p. 385.

Shell subcompressed, thin, smooth, semitransparent, clouded with brown; ears unequal; under side more prominent than the upper.

Found in the Frith of Forth, by Captain Laskey.

16. PECTEN TUMIDUS.

*Pecten tumidus*, Turton, Biv., p. 212, pl. 17, f. 3; Fleming, p. 384.

"Shell equivalve, inequilateral, quite smooth, with one of the sides produced; a quarter of an inch in diameter, orbicular, glossy white, transparent, and without striæ, ribs, or marks of any kind; the sides not equal, in consequence of one of them being prominent in a rounded manner; ears nearly equal."—*Turton*.

Taken from the *Serpula tabularia*, at Torbay, by Dr. Turton.



## GENUS 6.—LIMA.—Bruguère.

Shell longitudinal, equivalve, inequilateral; sides somewhat thickened, and gaping; umbones divergent, their internal facets inclined outwards; hinge provided with two lateral teeth, one on each side in both valves, which become nearly obsolete in adult shells; area between the beaks to which the ligament is attached, tripartite; the middle or hinge pit rounded above, and contains the chief portion of the ligament, the remaining portions are attached to the somewhat elongated linear divisions; muscular impression lateral, suborbicular, from the inner margin of which the muscular impression of the mantle emanates, and traversing the outside of the valves in a circuitous form, appears to terminate near the beak; external surface covered with a very thin epidermis.

## 1. LIMA SULCATA, pl. XXIII, f. 4, 5.

*Lima sulcata*, First Ed., pl. 31, f. 4, 5; Leach, MSS., p. 11; *Lima subauricularia*, Fleming, p. 388; Turton, Biv., p. 218; *Pecten subauricularia*, Montagu, Sup., p. 63.

Shell white, pellucid, oblong-ovate, equilateral, and equivalve; provided with small angular auricles; whole surface covered with numerous, longitudinal, divergent striæ, with two opaque, central, rib-like projections emanating from the umbones, and terminating on the margins, which are crenated; inside smooth, glossy, with indications of the two external ribs. Length upwards of three-eighths; breadth half its length.

First discovered on the Devonshire coast, and has been met with in the Frith of Forth and Zetland.

A variety of this shell was found in sand, south of Bute, by Stewart Ker, Esq., in which the two elevated central striæ are not so conspicuous, but are indicated internally; it also differs in all the striæ on the sides having intermediate ones, which are less elevated than the others.

## 2. LIMA FRAGILIS, pl. XXIII, f. 6, 7, 7.\*

*Lima fragilis*, First Ed., pl. 31, f. 6, 7; Lamarck, VI, p. 157; Fleming, p. 388; Forbes, p. 40; *Lima bullata*, Turton, p. 217, pl. 17, f. 4, 5; *Lima Goodallii*, Leach, MSS., p. 11; *Pecten fragilis*, Montagu, Sup., p. 62; Brown, Ency. Brit., p. 418.

Shell subovate, very convex, fragile, white, subpellucid; valves equal, inequilateral, one side straight, the other arcuated, nearly closed on all sides, with numerous, slightly undulating, longitudinal striæ, and with two or three minute, fine, intermediate ones; auricles small, oblique; umbo prominent, small, and straight, the beaks distant; inside smooth, shining, and white; hinge line a little oblique. Length upwards of three-quarters of an inch; breadth not quite half an inch.

Found on the Devonshire and Manx coasts; and at Bute and Frith of Forth, Scotland.

## 3. LIMA TENERA, pl. XXIII, f. 8, 9.

*Lima tenera*, First Ed., pl. 31, f. 8, 9; Turton, Zool. Journ., II, p. 362, pl. 13, f. 2; Forbes, p. 41; Ib., Mag. Nat. Hist., V, p. 594, f. 64.

Shell compressed, inequilateral, gaping at both sides; anterior side somewhat triangular, with the opening margined internally, with a strong rounded rib; external surface furnished with twenty-five somewhat undulated, nearly smooth ribs; margin serrated; hinge line oblique.

This species is much stronger than the *L. fragilis*.

First found in the British Channel, by Dr. Turton; Forbes

found it on the Manx coast; and it was detected at Lamlash Bay, Arran, by James Smith, Esq., of Jordan Hill.

## 4. LIMA VITRINA, pl. XXIII, f. 10, 10,\* 11, 11.\*

*Lima vitrina*, First Ed., pl. 31, f. 10, 11.

Shell oblong-ovate, convex, very fragile, white, and subpellucid; hinge line very oblique, with a large triangular pit for the accommodation of the cartilage socket; umbo small, and much turned to one side; whole shell considerably twisted; the valves gaping on both sides, with numerous, slightly undulated, notched, divergent striæ, crossed by exceedingly fine, undulating, concentric striæ, not discoverable without the aid of a lens, and with many, nearly obsolete, concentric wrinkles; auricles small, slightly striated transversely; inside clear white, and very glossy. Length nearly an inch and a half; breadth about an inch.

I found one valve of this at Ballantrae, Ayrshire; and it was afterwards met with on the Argyleshire coast, by Captain Carmichael; and Mr. Stewart Ker found it on the shores of the Island of Bute.

## 5. LIMA INFLATA?

*Lima inflata?* Forbes, Mag. Nat. Hist., V, p. 593, f. 63; Ib., Mal. Mon., p. 41; Lamarck, VI, p. 156?

"Shell strong, inflated with rough longitudinal ribs, crossed by lines and furrows of growth; gaping on all sides widely. Dimensions, length fourteen-tenths; breadth nine-tenths; thickness nine-tenths."

Dredged in deep water off the Manx coast, by Professor Forbes.

## SECTION III.—Ligament marginal, elongated.

## FAMILY I.—MALLEACEA.

Shells foliaceous, more or less inequivalve, with a marginal ligament, which is partly linear, and simple, or interrupted by crenulations.

## GENUS 7.—AVICULA.—Lamarck.

Shell inequilateral, inequivalve, foliaceous, subquadrate, and oblique; pearlaceous within; hinge rectilinear, and produced on each side into rectilinear appendages, with a small, indistinct tooth in both valves; an elongated, marginal, ligamentiferous area, widened near its centre.

## 1. AVICULA ANGLICA, pl. XXIII, f. 3.

*Avicula Anglica*, First Ed., pl. 31, f. 3; Leach, MSS., p. 11.

Shell very thin, with the hinge line but slightly bent; cardinal lobe short, and acute above; posterior lobe rather long; whole surface concentrically wrinkled, with imbricated, nearly equidistant, scale-like spines, running in transverse series; outside fawn-coloured, with interrupted, longitudinal streaks of umber-brown, becoming iridescent towards the base, besides the scales, which are attached to the elevated striæ; at regular intervals it is provided with long, sharp spines, of a yellowish-brown colour, which lie close to the shell.

Discovered on the Devonshire coast, by Dr. Leach.

## 2. AVICULA ATLANTICA, pl. XLVI, f. 6, 7.

*Avicula Atlantica*, First Ed., pl. 10,\* f. 6; Lamarck, VI, p. 148; *Avicula hirundo*, Turton, Biv., p. 220, pl. 17, f. 3; Fleming, p. 405; *Mytilus hirundo*, Turton, Conch. Dict., p. 101, pl. 1, f. 7.

Shell smooth, or provided with a few scales near the margin, generally of a uniform, dull greenish-brown, with pale purple rays; beaks separated by a linear, transverse cavity; inside pearly, and glossy, except round the margin, which is dull, and extremely thin; hinge with a single, small denticle, which fits into a slight hollow in the opposite valve. Length and breadth nearly equal.

First discovered in Bantry Bay, by Miss Hutchins, and afterwards found by Dr. Turton in Dublin Bay.

#### GENUS 8.—CRENATULA.—Lamarck.

Shell subequivalve, compressed, somewhat distorted, and lamellar; hinge lateral, linear, marginal, and internally crenulated; the crenulæ placed in a continuous series along the hinge, each of them presenting a small rounded callosity, and excavated for the reception of part of the ligament; muscular impressions almost obsolete, of an oblong form, and situate near the anterior margin of the pearly substance.

##### 1. CRENATULA TRAVISII, pl. XXIII, f. 20.

*Crenatula Travisii*, Turton, Mag. Nat. Hist., VII, p. 350, f. 47.

"Shell rhombic, rounded below, transparent, whitish, with pale violet, longitudinal, interrupted stripes; the anterior margin incurved; nearly an inch long, and full half an inch broad; extremely thin and brittle; obliquely truncate at the top, with a few pale violet spots below; hollowed out at the front margin in a slight crescent-shaped form."—*Turton*.

Taken alive at Scarborough, by Mr. Bean, and is in his cabinet.

#### GENUS 9.—CRENELLA.—Brown.

Shell oblong-oval, equilateral, ventricose; beaks obtuse, slightly turned to one side; hinge destitute of teeth, but with a flattened, horizontal, slightly crenated plate on one side of the hinge in each valve; right valve with a triangular, horizontal, projecting, reflexed plate, and the left one with an oblique plait, both of which are a little crenated externally.

##### 1. CRENELLA ELLIPTICA, pl. XXIII, f. 12, 13, 14.

*Crenella elliptica*, First Ed., pl. 31, f. 12, 13, 14; Jeffreys, Mal. and Conch. Mag., No. II, p. 45; Brown, Conch. Text Book, p. 143, pl. 18, f. 13; *Mytilus decussatus*, Montagu, Sup., p. 69; Laskey, Wernerian Mem., I, p. 394, pl. 8, f. 17; Fleming, Brit. An., p. 411.

Shell longitudinally ovate, ventricose, thin, and pellucid; umbones acute, turned to one side; sides equal, rounded; covered with a pale olive-green epidermis; with fine, regular, divergent striæ, and crossed by very minute, equidistant, concentric striæ, and a few distant lines of growth, producing a fine decussated appearance when seen under a strong lens; beneath the epidermis the shell is white; inside smooth, exhibiting nacreous reflections, the margins finely crenulated. Length an eighth of an inch; breadth not so much.

Discovered by Captain Laskey at Dunbar; I dredged it in the Frith of Forth, opposite Portobello; it has been also found at Zetland, and the coast of Argyle; and J. G. Jeffreys, Esq., met with it at Lerwick Sound, in 1841.

#### FAMILY II.—MYTILACEA.

Hinge with a linear, subinterior, marginal ligament, very entire, and occupies a considerable portion of the anterior margin; shells generally foliaceous.

#### GENUS 10.—PINNA.—Linnæus.

Shell equivalve, longitudinal, oblique, wedge-shaped; beaks forming an elongated point; posterior side generally truncated, and always gaping; the base and anterior margin forming together a straight line, the latter gaping a little in the centre for the passage of the byssus; hinge without teeth; ligament margin greatly lengthened and linear, and continuing along the whole dorsal region; two muscular impressions in each valve, the posterior one very large, almost central, the anterior one terminal, and sometimes double; pallial impression destitute of a sinus.

##### 1. PINNA INGENS, pl. XXVI, f. 1.

*Pinna ingens*, First Ed., pl. 30, f. 1; Pennant, IV, p. 115; Montagu, p. 180 and 583; *Ib.*, Sup., p. 72; Brown, Ency. Brit., VI, p. 424; *Ib.*, Wernerian Mem., II, p. 516; Maton and Rackett, p. 112; Turton, Biv., p. 221, pl. 20, f. 1; *Pinna fragilis*, Turton, Biv., p. 222, pl. 20, f. 20; Fleming, p. 406; *Pinna lævis*, Donovan, pl. 152.

Shell nearly straight from the beak along the hinge line, slightly turned inwards at the apex, and connected the whole length, very rugged, foliaceous, with irregular, concentric wrinkles emanating from the beak at the open side, and running lengthways, turn to the hinge at nearly right angles; sometimes in the form of interrupted laminae, or plates; a few interrupted, longitudinal striæ rise from the beak, crossing the wrinkles, and sometimes forming on the broader portions of the shells, a few remote concave spines; opposite side concave, or indented, swelling out gradually at the larger end, where the valves are always separated, leaving a gap between them; basal margin irregularly waved; external surface of an opaque, dull horn-colour, frequently inclining to umber-brown; sometimes of a blue cast towards the smaller end; inside smooth, glossy, of a dark pearly lustre, and a little lamellated towards the beak.

This species grows to a large size, being not unfrequently upwards of twelve inches in length, and seven inches in breadth at the basal end.

Found in the Hebrides; Salcomb Bay, Devonshire; and found at Portrush, County of Antrim, Ireland, by Mrs. Clewlow, of Belfast. They are found in gravelly bottoms, among mud, standing upright, the smaller end being downwards, and firmly attached to their habitat by a byssus of long silky filaments, of a dark purplish-brown colour, two or three inches in length.

##### 2. PINNA FRAGILIS, pl. XXVI, f. 3.

*Pinna pectinata*, First Ed., pl. 30, f. 3; *Pinna fragilis*, Pennant, p. 114, pl. 59, f. 80; Fleming, p. 406; *Pinna pectinata*, Montagu, p. 178; Brown, Ency. Brit., VI, p. 424; Turton, Biv., p. 223, pl. 19, f. 1.

Shell subpellucid, thin, brittle, of a light horn-colour, sometimes greenish, but darker towards the beaks; surface with about eleven longitudinal, narrow ribs, emanating from the apex, and extending to the basal margin, these are beset with

concave spines, which increase in size towards the base; about a third of the shell opposite the ligamentary side is destitute of ribs, but furnished with fine, oblique striæ, which extend from the margin of the valves till they meet the ribs; hinge side nearly straight, but inclining slightly towards the beaks, and sometimes a little convex in the middle; base gaping, somewhat rounded, and tapering towards the apex; hinge side a little longer than the other; inside smooth, somewhat dull nacreous; under the apex a few transverse, cartilaginous laminae. Length six inches; breadth at the base somewhat more than two and a half.

Found in deep water off the Eddystone Lighthouse, near Plymouth, and also on the Dorsetshire coast, near Weymouth; at Torbay, and on the Sussex coast.

3. *PINNA ELEGANS*, pl. XXVI, f. 2.

*Pinna elegans*, First Ed., pl. 30, f. 2; Leach, MSS., p. 10; *Pinna papyracea*, Turton, Biv., p. 224, pl. 20, f. 3.

Shell thin, elongated, of a yellowish horn-colour; provided with from six to nine inequidistant, smooth, rounded ribs, emanating from the apex, and radiating towards the base, occupying nearly the entire surface of the valves; narrow end inflated for some distance beyond the middle, but much compressed towards the base, which is rounded. Length six inches and a half; breadth at base nearly three inches.

A deep water species, dredged by Mr. Prideaux on the Devonshire coast, and has been found off Torbay.

#### GENUS 11.—DREISSENA.—Van Beneden.

Shell boat-shaped, or mytiliform; valves carinated; ligament internal, except in a little fissure in both valves externally; a rude cardinal tooth is situated under the umbo in the right valve, which locks into a corresponding cavity in the left valve; in the umbonal angle of both valves is placed a transverse partition, for sustaining a closing muscle; anterior marginal seam with a fissure near its centre, for the passage of the byssus.

1. *DREISSENA POLYMORPHA*, pl. XXIX, f. 4, 5, 6, 7, 8, 9.

*Dreissena polymorpha*, Van Beneden, Ann. Sci. Nat., 1835, p. 210, pl. 8, f. 1 to 11; Strickland, Mag. Nat. Hist., 1838, p. 361; Alder, Mag. Zool. and Bot., II, p. 117; *Tichogonia Chemnitzii*, Rossmassler, I, p. 113, pl. 3, f. 69; *Mytilus polymorphus*, Pallas, Voy. Russ. App., p. 211; *Mytilus Wolgæ*, Chemnitz, XI, p. 205, f. 2028; *Mytilus Hagenii*, Baer, Fér. Bull. Sci. Nat., 1826, p. 140; —? *Volgensis*, Gray, Ann. Phil., 1825.

Shell cymbiform, extremely flat in front, and acutely carinated behind; umbones incurved, pointing anteriorly, turned downwards at the points, and very closely pressed together; anterior side with an elongated, cordiform groove, reaching nearly to the centre of the valves, towards the base of which is a large, wide, elongated hiatus, acute at both ends, always situated in the right valve, for the passage of the byssus; the edge of the opposite valve being always entire; external surface covered with a rather strong, olivaceous, irregularly wrinkled epidermis, with indications of nearly obsolete, longitudinal, divergent ribs, or elevations; beneath this the shell is beautifully mottled with zigzag brown, or purple, transverse clouds or markings; inside dull white, with the pallial and muscular impressions of a purple hue, and very glossy.

This species is subject to great variety in length and breadth, varying from an inch and five-eighths to an inch in length. Some are elongated and narrow; others short and broad. It inhabits the commercial docks in various parts of Great Britain, and is to be met with in most of our canals. It is common in the Bridgewater canal, and also in many places in the canal betwixt Manchester and Hull; and was found by my friend Mr. Stark in the Union canal, near Edinburgh, in 1834. The animals are gregarious, generally found adhering in clusters by a strong byssus.

This shell is not an aboriginal of Britain, being a native of the Volga, the Danube, and other continental rivers, and has been introduced upon timber; but is now so generally diffused throughout Britain, that it may fairly be considered as a British shell.

#### GENUS 12.—MYTILUS.—Linnæus.

Shell equivalve, regular, longitudinal, somewhat wedge-shaped, with the beaks terminating in a pointed summit; posterior side rounded, and closed; base forming a continuous line with the anterior margin, in a direction oblique to the hinge line; anterior margin gaping slightly in the centre, for the passage of the byssus; hinge destitute of teeth; ligament marginal, greatly elongated, and subinternal; outside covered with a strong horny epidermis; two muscular impressions, the posterior one large and irregular, the anterior very small and terminal; pallial impression irregular, destitute of a sinus.

1. *MYTILUS EDULIS*, pl. XXVII, f. 11, 12, 13, 14, 15, and pl. XLV, f. 4, 5, 6, 7.—First Ed., pl. 29, f. 11, 12, 13, 14, 15. *Variety 1*, pl. XXVII, f. 11.

*Mytilus edulis*, Linné, Syst. Nat., p. 1157; Lister, Conch., pl. 362, f. 200; Pennant, IV, p. 110, pl. 63, f. 73; Montagu, p. 159; Donovan, pl. 128; Lamarck, VI, p. 126; Brown, Ency. Brit., VI, p. 423; Ib., Wernerian Mem., II, p. 515; Fleming, p. 411; Forbes, p. 43; Turton, Brit. Biv., p. 196; Maton and Rackett, p. 105; *Mytilus vulgaris*, Da Costa, p. 216, pl. 15, f. 5.

Shell longitudinal, rather strong, oblong; beaks pointed, subacute; anterior side angulated, nearly parallel; posterior side produced; covered with a thick, smooth, dark olive-green or brownish epidermis, beneath which the shell is white or blue, longitudinally radiated with deep blue or purple; inside white, its margin blue. Length three inches; breadth generally about half its length; but varying in this respect in different localities.

Common on most of the British coasts, adhering to rocks, stones, and gravel, by a filamentary byssus.

*Variety 2*. *ELEGANS*, pl. XXVII, f. 14, 15.

*Mytilus elegans*, Leach, MSS., p. 11.

More elongated than the former variety, with the posterior side less rounded; the epidermis very glossy.

Found in the mouth of the river Tay, below Broughty Ferry, in deep water.

*Variety 3*. *PELLUCIDUS*, pl. XXVII, f. 13.

*Mytilus pellucidus*, Pennant, IV, p. 112, pl. 63, f. 75; Chemnitz, VIII, pl. 84, f. 755; Montagu, p. 160; Donovan, pl. 81; Maton and Rackett, p. 107; Brown, Ency. Brit., VI, p. 423; Ib., Wernerian Mem., II, p. 415; Turton, Brit. Biv., p. 197, pl. 15, f. 1, 2; Forbes, p. 43.



Generally rather shorter and broader than the former two varieties, the anterior side less indented than the *edulis*, and much thinner and more transparent, both in the shell and epidermis, which is generally of a rich yellow, or amber, under which the shell is beautifully radiated with deep purple, or blue; inside very smooth and glossy, with the radiations very distinct; the crenulations under the beaks small.

This variety is much less common than the *M. edulis*, and is generally met with in the estuary of rivers.

Variety 4. SUBSAXATILIS, pl. XLV, f. 4, 5, 6, 7.

*Mytilus subsaxatilis*, Williamson, Mag. Nat. Hist., VII, p. 353, f. 48, a, b, c, d; *Mytilus angulatus*, Alder; *Mytilus solitarius*, Mark; *Mytilus edulis*, var. *crassus*, Brown, MSS.

Shell strong, solid, very thick in proportion to its length; beaks considerably elongated; hinge line straight, which is particularly obvious in the young shell (f. 6); front seam, or union of the valves, undulous; colour of a grayish-blue; the epidermis dull olive; young shells deep bistre-brown.

Inhabits the coasts of Yorkshire, Durham, and Northumberland.

Mr. Williamson says this shell "is found in large pools left by the retiring tide, in groups of three or four together, firmly attached by their strong byssus to the under surface of large stones." He considers it a distinct species, and says "the character of its habitat, combined with its peculiar solid form, give it as good a title to be styled a distinct species as, if not a better one than, that of the transparent shell of the *M. pellucidus*, or the small blunted form of the shell of *M. incurvatus*, does these species respectively."

I first noticed this variety, in 1810, in company with my late valued friend Mr. Hancock, of Newcastle, at the mouth of the Tyne, below Tynemouth, adhering to stones left dry by the tide, in small groups; and recorded it as a mere variety of *M. edulis*; not being able to detect any specific distinction in the animals. There can be but little doubt that the five forms enumerated are only permanent varieties of the same species.

Variety 5. INCURVATUS, pl. XXVII, f. 12.

*Mytilus incurvatus*, Pennant, IV, p. 111, pl. 64, f. 74; Montagu, p. 160; Maton and Rackett, p. 106, pl. 3, f. 7; Brown, Wernerian Mem., II, p. 515; Ib., Ency. Brit., VI, p. 423; Turton, Biv., p. 197; Fleming, Edin. Ency., VII, p. 99.

Shell strong, opaque, broader at the base, in proportion to its length, than any of the preceding varieties; posterior side much incurvated; shell for the most part greatly inferior in size to the other varieties, although in some few instances we have found them an inch and a half in length.

2. MYTILUS CRENATUS, pl. XXIII, f. 1, 2.

*Mytilus crenatus*, First Ed., pl. 31, f. 1, 2; Davies and Willcox, Ann. of Phil., August, 1825, p. 148; Ib., Zool. Journ., I, p. 584; Lamarck, VI, p. 120; Ency. Meth., pl. 217, f. 3.

Shell oblong-ovate, subtrigonal, beaks rather obtuse; with strong, longitudinal, rounded ribs, producing a crenulated margin; slightly wrinkled transversely; covered with an olive epidermis, beneath which the shell is of a reddish-violet colour; inside tinged with golden-yellow, transversely streaked with purple, bluish at the margins, and crenulated. Length nearly three inches; breadth an inch and a quarter.

This is an introduced species, having been brought from India, by the ship "Wellesley," in 1816; and has propagated in Portsmouth Harbour, where it is now completely naturalized.

#### GENUS 13.—MODIOLA.—Lamarck.

Shell subtransverse, equivalve, regular, oblique; form oblong, somewhat wedge-shaped, and greatly inequilateral; anterior side very small, and obtuse; posterior side rounded, and close; anterior margin slightly gaping, for the passage of the byssus, and forming, with the base, a line oblique to the dorsal one; beaks nearly lateral; outside covered with a strong, horny epidermis; hinge without teeth; ligament elongated, and subinternal; two muscular impressions; the posterior one large, sublateral, elongated, and irregular, the anterior one small, and terminal; the pallial impression irregular, and destitute of a sinus.

1. MODIOLA PAPUANA, pl. XXVII, f. 1, 2, 3, 4, 5, 6.

*Modiola papuana*, First Ed., pl. 29, f. 1, 2, 3, 4, 5, 6; Lamarck, VI, p. 111; Leach, MSS., p. 11; *Modiola vulgaris*, Fleming, p. 412; *Modiola modiolus*, Turton, Biv., p. 199, pl. 15, f. 3, young; *Mytilus modiolus*, Pennant, IV, p. 113, pl. 66, f. 77; Montagu, p. 163; Donovan, pl. 23.

*The young shell*, pl. XXVII, f. 2, 5, 6.

*Mytilus curtus*, Pennant, IV, p. 112, pl. 64, f. 76 A, young; *Mytilus barbatus*, Donovan, pl. 70; Montagu, p. 161.

Shell strong, convex, rounded and prominent, transversely subovate, oblong; posterior side, or that close to the beak, extremely short, and slightly rounded; anterior side extremely long, and much rounded; basal line slightly concave; outside covered with a strong, thick, purplish-black or dark brown epidermis, and longitudinally wrinkled; inside smooth, and white, exhibiting pearlaceous reflections in some specimens. Length at broadest side three inches; breadth six inches.

The fine specimen from which our drawing was made, was dredged in the British Channel, and is in the cabinet of Wm. Nicol, Esq., Edinburgh; and I possess a specimen, measuring seven inches in length, and three inches and a quarter in breadth, which was caught by a fisherman's line, near the Bell Rock, coast of Forfarshire.

The young shell in its first stages is frequently of a pale yellowish-white, beautifully radiated with pink or chestnut-brown, with transverse streaks of the same colours; as exhibited in our figures 5 and 6. In a more advanced stage, it is covered with a strong, chestnut epidermis, having the anterior side and base beset with long, unequal, straggling filamentary processes, which have been termed a beard. This beard is merely a prolongation of the epidermis, which drops off when the shell grows to about two inches. In this condition it is the *M. barbatus* of authors.

Variety 1. UMBILICATA, pl. XXVII, f. 3, 4.

*Mytilus umbilicatus*, Pennant, p. 228, pl. 68; Donovan, pl. 40; Montagu, p. 164.

Shell with a deep, intorted, and wrinkled depression under the beak.

This is merely an accidental, and by no means uncommon, variety of the shell.

The *M. papuana* is a deep water species, and is firmly fixed to the bottom by a byssus, composed of long silky filaments.

## 2. MODIOLA GIBBSII, pl. XXVII, f. 7.

*Modiola Gibbsii*, First Ed., pl. 29, f. 7; Leach, MSS., p. 11; Ib., Miscell., II, p. 34, pl. 72, f. 2; Turton, Biv., p. 200, but not the figure; Fleming, p. 413.

Shell somewhat triangular, compressed; beaks rounded; posterior side very short; anterior side very long; basal margin a little concave; external surface regularly and transversely striated, covered with a thick, umber-brown epidermis, which extends into foliations at the lines of growth; these are prolonged into filamentary processes, each of which is pectinated or notched down both sides, producing a bearded appearance; inside of a yellowish-white. Length about two inches.

This species is much more triangular than the young of *M. papuana*, and will easily be distinguished by the beard being simple in that species, while it is serrated in the present. Turton has completely mistaken the figure of this species, and has given that of *M. marmorata* in its stead.

Found on the Western coasts of England.

## 3. MODIOLA DISCREPANS, pl. XXVII, f. 8.

*Modiola discrepans*, First Ed., pl. 29, f. 8; Lamarck, VI, p. 114; Forbes, p. 44; Fleming, p. 413; *Mytilus discrepans*, Montagu, p. 169; Ib., Sup., p. 65, pl. 26, f. 4; Brown, Ency. Brit., p. 424; *Mytilus discors*,  $\beta$ , Maton and Rackett, p. 111, pl. 3, f. 9.

Shell thin, suboval, compressed; external surface divided into three compartments, the posterior and anterior sides longitudinally ribbed, the middle area slightly wrinkled; umbones obtuse and blunt, placed considerably towards the posterior side, which is much narrower than the broad and rounded anterior one; whole surface covered with a thick, black epidermis; inside white, exhibiting iridescent reflections. Usual length at broadest part somewhat more than half an inch; breadth an inch and a quarter. It has been found two inches in breadth.

Found on most of the British and Irish coasts.

## 4. MODIOLA MARMORATA, pl. XXVII, f. 10.

*Modiola discors*, First Ed., pl. 29, f. 10; Fleming, p. 413; Turton, Biv., p. 201, pl. 15, f. 4, 5; *Modiola marmoratus*, Forbes, p. 44; *Mytilus discors*, Pennant, IV, p. 240; Montagu, p. 167; Maton and Rackett, p. 111, pl. 3, f. 8; Brown, Wernerian Mem., II, p. 515; Ib., Ency. Brit., p. 424.

Shell very convex, somewhat cordiform; the posterior and anterior sides with about eighteen fine, longitudinal ribs, broader and stronger on the posterior side; the middle area plain, or slightly wrinkled transversely; umbones large, prominent, obtuse at the point, turned to one side, and situate near the posterior side, which is rounded; anterior side beaked, and slightly constricted; external surface covered with an olive-green, glossy epidermis, beneath which the shell is white, often mottled with pink or pale red; inside white, tinged with pink; margin provided with crenulations, which correspond with the exterior surface, which is ribbed, the other portions plain. Ordinary length three-eighths of an inch; breadth five-eighths; sometimes, however, although rarely met with, seven-eighths in breadth.

This species is common on all the British coasts, burrowing in the roots of *Algæ*, and very often found lodged in the substance of the *Ascidia Mentula*.

This is not the *M. discors* of Lamarck, which is a foreign species, and very different from our shell; and, therefore, I cordially approve of the name given to it by my friend Professor Forbes.

Young shells of the *M. discrepans* have been confounded with this species, but the following distinctions will shew that they are widely different. The *M. discors* is very convex, nearly as thick as broad, and pointed at the anterior side; the posterior side with about eighteen ribs; while the *M. discrepans* is depressed, broad and rounded at the anterior side, and with only eight or nine ribs on the posterior side; the epidermis is also more dull.

## 5. MODIOLA PRIDEAUXIANA, pl. XXVII, f. 9.

*Modiola Prideauxiana*, First Ed., pl. 29, f. 9; Leach, Zool. Miscell., II, p. 34; Ib., MSS., p. 11.

Shell subtransverse, a little compressed; striated from the umbo to the basal margin, with transverse, almost equidistant wrinkles; colour pale saffron-yellow externally, and white internally, with a slight metallic lustre. Length about an eighth of an inch; breadth a quarter.

Found on the Devonshire coast, by Mr. Prideaux.

## 6. MODIOLA RHOMBEA, pl. XXXIX, f. 17.

*Modiola rhombea*, Berkeley, Zool. Journ., III, p. 229, Sup., pl. 18, f. 1.

Shell thin, subrhomboidal, gibbous, with transverse, subcrenulated plications, and longitudinal ribs, which are somewhat obscure behind; umbones prominent, and incurved. Length from the umbo to the basal margin two lines.

A single specimen of this interesting shell was dredged up at Weymouth, in August, 1826, adhering by its byssus to a large mass of slate.

## ORDER II.—DIMYAIRA.

Shell provided with two separate lateral muscular impressions.

## SUB-DIVISION I.—LAMELLIPEDES.

## FAMILY I.—NAYADES.

Shells inhabiting fresh waters; the hinge sometimes with an irregular, simple, or complex tooth, and a longitudinal prolonged one, and sometimes none. Some have a compound muscular impression; and the umbo is frequently decorticated.

## GENUS 1.—ANODON.—Bruguière.

Shell equivalve, inequilateral, and transverse, for the most part very thin; hinge line nearly straight; hinge glabrous, with smooth lamina, destitute of cardinal teeth, truncated, or forming a sinus at the anterior end, terminating the apex of the shell; two lateral remote, muscular impressions, the posterior one being compound; pallial impression entire, and seldom distinctly marked; ligament linear, external, sunk in a cleft at the anterior extremity; inside pearlaceous; external surface covered with a shining epidermis.

## 1. ANODON CYGNEUS.

*Anodonta Cygnea*, Lamarck, An. San. Vert., VI, p. 84; Draparnaud, Hist. Nat. des Moll., p. 134, pl. 11, f. 6, and pl. 12, f. 1; *Anodon Cygneus*, Turton, Brit. Biv., p. 239; *Mytilus Cygneus*, Linnæus, Syst. Nat., p. 1158; Gmelin, p. 3355; Montagu, Test. Brit., p. 170.

Shell thin, oblong-ovate, tumid; anterior side short, rounded; posterior slope elongated, and somewhat pointed, more or less angulated, and subcompressed; umbones but slightly produced, and placed nearest the anterior side.

This species is subject to great variety of form. These varieties have, by different authors, been considered distinct species; but we have not been able to detect any specific difference in the animal inhabitant. There are, however, several well-marked and permanent varieties, the distinguishing characteristics of which we shall endeavour to point out. Most of the Anodons undergo considerable change, in their progress from the young to the adult condition.

Variety 1. CYGNEUS, pl. XXVIII, f. 1, 3, 4.

*Anodonta Cygnea*, Pfeiffer, I, p. 111, pl. 6, f. 4; Rossmassler, I, p. 111, pl. 3, f. 67; Ib., V, VI, pl. 25, f. 342; *Mytilus Cygneus*, Pennant, Brit. Zool., IV, p. 113, pl. 67, f. 78; Donovan, Brit. Sh., pl. 55 and 113; Maton and Rackett, Linn. Tr., VIII, p. 109, pl. 3 A, f. 2; Sheppard, Linn. Trans., XIII, pl. 5, f. 3; Montagu, Test. Brit., p. 170; Fleming, Edin. Ency., VII, p. 96, pl. 205, f. 16; Thompson, Ann. and Mag. Nat. Hist., VI, p. 40; *Anodon Cygnea*, Alder, Mag. Zool. and Bot., II, p. 117.

Shell rather thin, oblong-ovate, inflated; umbo small, placed near the anterior side, which is rounded and short; posterior side elongated, with the hinge line nearly parallel, or slightly oblique, from whence it suddenly slopes into a subrostrated form; lower margin rounded, gradually sloping upwards towards the posterior side; external surface concentrically wrinkled, and covered with an olive-green, shining epidermis; inside pearlaceous.

Figs. 3 and 4, young shells.

Found in the river Ouse, at York; the Thames, near Windsor; in the ponds at Elmingham Park, the seat of the Countess of Dysart, Suffolk; Loch Kettrine, Scotland; in the Grand Canal, and the Moyntags, County of Armagh, Ireland; and many other lakes and rivers in Britain and Ireland.

Variety 2. CELLENSIS, pl. XXVIII,\* f. 1, 2.

*Anodonta cellensis*, Encyclopedia Methodique, pl. 202; Pfeiffer, I, p. 110, pl. 6, f. 1; Rossmassler, IV, p. 23, pl. 19, f. 280; *Anodon cellensis*, Alder, Mag. Zool. and Bot., II, p. 118; *Anodon Cygneus*, Draparnaud, Moll., pl. 12, f. 1; Turton, Man., pl. 1, f. 8; *Anodon paludosus*, Turton, Brit. Biv., p. 240, pl. 15, f. 6; *Anodonta sulcata*, Lamarck, An. San. Vert., V, p. 85; *Mytilus cellensis*, Schroeter, Flussconch., pl. 2, f. 1; *Mytilus anatinus*, Pennant, Brit. Zool., IV, p. 113, pl. 68, f. 79; Maton and Rackett, Linn. Tr., VIII, p. 110, pl. 3 A, f. 1; Montagu, Test. Brit., p. 171; Sheppard, Linn. Trans., XIII, pl. 5, f. 5; Fleming, Edin. Ency., VII, p. 99, pl. 204, f. 14.

Shell considerably elongated, with numerous, concentric, and rather deep wrinkles; hinge line and base nearly parallel to each other; anterior side short; posterior side very-long; the upper and under sides both suddenly contracting into a subrostrated form; covered with a greenish, shining epidermis.

This variety differs from the *Cygneus*, in its form being

much more lengthened, and in the hinge and basal lines being both nearly straight, and almost parallel to each other.

Fig. 2 represents the young shell.

This shell varies considerably in size in different localities. It has been found in the pond of my friend Thomas Glover, Esq., at Smedley Hill, near Manchester, measuring three inches and a quarter in length, and six and a half in breadth.

Found in the pond of the Infirmary, Manchester, and in many other ponds in the neighbourhood; Borrodale, Westmoreland; Loch Vennachar, Perthshire; the loch and ponds at Duddingston, near Edinburgh; and in the Grand Canal, near Shannon Harbour, King's County, Ireland.

This variety is more commonly diffused throughout Britain than any of the others.

Variety 3. ANATINA, pl. XXIX, f. 1.

*Anodonta Anatina*, Lamarck, An. San. Vert., VI, pt. 1st, p. 85; Pfeiffer, I, p. 112, pl. 6, f. 2; Rossmassler, V, VI, p. 57, pl. 30, f. 417 to 420; Thompson, Ann. and Mag. Nat. Hist., VI, p. 55; Alder, Mag. Zool. and Bot., II, p. 118.

Shell thin, subcompressed; anterior side very short, and rounded; hinge line abruptly ascending into an acute angle, and suddenly descends in a hollowed line to a somewhat truncated beak, which is a little produced at its lower angle; from the anterior side the basal line suddenly descends in a rounded form, and again makes an acute upwards angle, to meet the posterior line; outer surface covered with a shining, fresh-green epidermis.

The posterior side of the shell is very long, and much broader than in any of the former varieties.

This variety is easily distinguished from its congeners, by the posterior side being much broader than any of them, and from the very abrupt upwards angle of the hinge line. A modification of this variety occurs in the river Cam, near Cambridge. It is considerably more inflated than the ordinary form of *Anatinus*, and is of a small size. Its length is one inch and three-quarters; its breadth three inches and a quarter; and its thickness one inch and one-eighth.

Found at Southport, Lancashire; Loch Leven, Kinrossshire; Prestwick Carr, Northumberland, where we obtained the beautiful and highly characteristic specimen from which our figure was taken; and also in the rivers Shannon and Bresna, and the Grand Canal, Ireland.

Variety 4. STAGNALIS, pl. XXVIII, f. 2.

*Mytilus stagnalis*, Sowerby, Brit. Miscell., pl. 16; *Mytilus Cygneus*, Maton and Rackett, Linn. Tr., VIII, p. 109; Montagu, Test. Brit., p. 171.

Shell thin, much inflated; umbones subcentral; anterior side rounded, with a slight angle above; hinge line arcuated; posterior side slightly hollowed, and terminating in a subacute beak; basal line nearly semicircular; outer surface with an olivaceous, shining epidermis; very pearlaceous and iridescent internally.

In the younger condition, the colour is of a bright yellowish-green.

Found in the pond of Kew Garden; in the Canal Wharf at Bolton Bridge, Lancashire; and in the canal at Keighley.

Variety 5. INTERMEDIA, pl. XXX, f. 5, 6.

*Anodonta intermedia*, Lamarck, Hist. An. San. Vert., VI, p. 86; Pfeiffer, I, p. 113, pl. 6, f. 3; Alder, Mag. Zool. and Bot., II, p. 118.



Shell very thin, with the hinge line almost straight, and, ascending, forming an angle, from whence it descends in nearly a parallel direction, assuming an obtuse point; anterior side slightly angulated; the basal line arcuated, and descending considerably, in consequence of which the posterior side is very deep, being a third more than the anterior one; surface covered with a very bright yellowish-green epidermis, frequently with divergent rays of a deeper hue; ligament not protruding beyond the margin of the hinge line.

Found in the canal, near Keighley.

*Variety 6.* COMPLANATA, pl. XXVIII,\* f. 6, 7.

*Anodonta complanata*, Ziegler Museum; Rossmassler, I, p. 112, pl. 3, f. 68, a; *Anodonta compressa*, Menke, Syn., p. 106; a variety, Rossmassler, IV, p. 24, pl. 20, f. 283; Ziegler Mus.; *Anodonta rhomboidea*, Schlüt.

Shell very thin, compressed, elliptically-ovate; the superior, or hinge margin ascending, in a somewhat curved line, to the termination of the ligament, from whence it descends and terminates in a produced beak, quite at the lower angle of the posterior side; basal line very straight, with a slight curvature; anterior margin rounded, and narrow, near to which the slightly developed umbo is situate; whole surface with concentric wrinkles, and covered with a reddish-brown epidermis.

This variety is found in the river Calder, near Wakefield; and it has been forwarded to me from the Trent, at Repton, near Burton, by the kindness of Sir Oswald Mosley, Bart., a gentleman distinguished for the deep interest which he takes in the advancement of Natural Science.

*Variety 7.* AVONENSIS, pl. XXIX, f. 2.

*Mytilus Avonensis*, Montagu, Test. Brit., p. 172; Turton, Brit. Fau., p. 165; *Mytilus Cygneus*, var.  $\beta$ , Maton and Rackett, Linn. Tr., VIII, p. 110, pl. 3 A, f. 3; Fleming, Edin. Ency., VII, p. 99, pl. 206, f. 5; *Anodonta Anatina*, var., Rossmassler, VI, p. 57, pl. 30, f. 418.

Shell ovoid, or subrhomboidal, ventricose, rather thick, in some specimens very thick; anterior margin rounded, short; posterior margin long, and pointed; hinge line subarcuated; basal line slightly curved; external surface generally rough, with sharp concentric wrinkles, covered with a very thick, variously coloured, rather dull epidermis; sometimes olivaceous, and at others reddish-brown.

This variety is subject to considerable variation of form and size, and is in general well marked. It is usually of a dull white internally, with but little of the pearly lustre so prevalent in its congeners.

Found in the Avon and New River; also near Tisbury, Wiltshire; the Trent, near Burton; near Steeton; the canal, near Halifax, and of a large size in the canal, near Sowerby Bridge, Yorkshire.

*Variety 8.* PONDEROSA, pl. XXX, f. 1, 2, and pl. XXIX, f. 3.

*Anodon ponderosa*, Pfeiffer, II, p. 31, pl. 4, f. 1 to 6; Rossmassler, IV, p. 24, pl. 20, f. 282; *Mytilus Cygneus*, var.  $\beta$ , Maton and Rackett, Linn. Tr., VIII, p. 109, pl. 3 A, f. 3.

Shell large, thick, ponderous, rhombic-oval, very ventricose; externally wrinkled; with the epidermis rough, fibrous, and semivillous at the rounded anterior extremity, and at the base; posterior side long, subrostrated, and subtruncated at its extremity; base but slightly bent, or nearly parallel; hinge line

considerably arcuated, with a long ligament, from whence it somewhat abruptly descends; beneath the ligament a sinuated groove, rising abruptly, and forming a ventricose disk; umbones rather tumid, and decorticated; the ligamentary sinus small, subcordate; inside bluish-white. Length two inches and three-eighths; breadth four inches and five-eighths; thickness two inches and a half.

I was favoured with this interesting variety by my friend Mr. Henry Johnson, Curator of the Museum, Royal Institution, Liverpool, who found it at Otterspool, Aigburth, on the property of John Moss, Esq., who has since most kindly supplied me with a complete series for investigation. It also occurs in Loch End, near Edinburgh. Another handsome variety of this shell inhabits the lake at Rolleston, the seat of Sir Oswald Mosley, Bart., near Burton-upon-Trent, to whom I am indebted for a fine series.

The latter variety is somewhat more acuminate in the beaked side, and devoid of the villosity of the Otterspool variety, in which respect it agrees with that found at Loch End.

This shell has been mistaken for the *A. Avonensis*, by some British Naturalists. It is, however, considerably more inflated, in proportion to its size, and a third larger.

*Variety 9.* SUBRHOMBEA, pl. XXX, f. 3, 4.

*Anodon subrhombea*, Brown, MSS.; *Anodonta piscinalis*, var. ? Rossmassler, VI, pl. 30, f. 416.

Shell thick, subrhomboidal, rather inflated; anterior side slightly produced; hinge line nearly parallel, and ascending towards the posterior side; ligament long, subarcuated, from whence it suddenly declines towards the somewhat truncated extremity; basal line considerably arcuated; exterior surface but slightly wrinkled transversely; umbones small, and acute; inside bluish-white, with faint pearlaceous reflections.

This variety differs from the *A. piscinalis*, in being more ponderous, and more inflated, in the hinge line being more arcuated, and in being less rostrated.

Found in the Irwell, near Manchester, by my esteemed friend Mr. Samuel Gibson, of Hebden Bridge, Yorkshire; to whom I am indebted for specimens.

*Variety 10.* PISCINALIS, pl. XXVIII,\* f. 3, 4, 5.

*Anodonta piscinalis*, Nilsson, p. 116, No. 3; Draparnaud, Hist. des Moll., pl. 12, f. 2; Rossmassler, IV, p. 23, pl. 19, f. 281; *Anodonta ventricosa*, Pfeiffer, II, p. 30, pl. 3, f. 6; Alder, Mag. Zool. and Bot., II, p. 118; wood cut, Kenyon, Mag. Nat. Hist., I, f. 188; *Mytilus maculatus*, Sheppard, Linn. Trans., XIII, pl. 5, f. 6, young shell.

Shell subovate, ventricose, thick; hinge line ascending in a waved, subarcuated sweep towards the posterior side, and descending in a hollow bent line, ending in a produced, turned upwards beak; basal margin considerably arcuated, and ascending rather abruptly towards the posterior side; outer surface covered with a thick, shining, olivaceous epidermis, with many obscure, radiating lines of a darker hue.

Found in the canal, near Birmingham; and in Combermere, Cheshire, where I procured an extensive series, while on a visit at the Abbey, through the polite attention of Viscount and Lady Combermere.

*Variety 11.* ROSTRATA, pl. XXVIII,\* f. 8, 9.

*Anodonta rostrata*, Kokeil Museum; Rossmassler, IV, p. 25, pl. 20, f. 284.

Shell compressed, considerably elongated transversely, thin; anterior side very short; posterior side very long, and produced into a somewhat lengthened, blunted beak; hinge line arcuated, and ascending, its greatest altitude being nearly central; anterior side rather narrow, and rounded; posterior side descending in a waved line; basal line nearly parallel, and undulating; umbones convex; outside rather smooth, and covered with a blackish-brown epidermis.

Said to be found in ponds at Liverpool, but I have never met with one from that locality.

An extremely thin and lengthened variety, which is covered with a reddish-brown epidermis, and rather rough on the surface. It inhabits Loch Kettrine, Perthshire. Our figure is taken from a specimen procured in that locality.

*Variety 12.* CONTORTA, pl. XXX, f. 7, 8.

Shell of moderate thickness; hinge line quite parallel; the ligament hardly protruding beyond the hinge line; umbones very flat; anterior side very short, narrow, and a little pointed; posterior side very broad, subrostrated, with a remarkable flexure, caused by a strong rib-like process, emanating in both valves from the umbones, and thickening towards the margin; the basal line prominently arcuated; shell considerably inflated, one valve much more convex than the other.

This remarkable variety was found by Thomas Glover, Esq., of Smedley Hill, inhabiting ditches, in a flat meadow, not far from the School House, at Repton, near Burton-upon-Trent. Upwards of twenty specimens were obtained by him. Sir Oswald Mosley kindly undertook to procure specimens of this desirable shell; but on visiting the spot, found the locality completely destroyed, in consequence of a new bridge having lately been built across the Trent; and although the ditch in which they were found communicated with the river, yet no traces of the shell could be found.

#### GENUS 2.—UNIO.—Bruguière.

Shell transverse, equivalve, inequilateral, free, sometimes subcordate, or suborbicular; pearlaceous within; generally covered with a dark olivaceous epidermis, which is usually decorticated on the umbones; hinge provided with a short, irregular, simple, or a double compound tooth, which is almost always striated; with two elongated, compressed, lateral teeth, the front one produced, sometimes obsolete; two muscular impressions in each valve, the superior one compound, or composed of several divisions; ligament external.

1. UNIO PICTURUM, pl. XXXI, f. 7, 8, 9, 10, 11.

*Unio pictorum*, First Ed., pl. 26, f. 4; Lamarek, An. San. Vert., VI, p. 77; Ency. Meth., pl. 248, f. 4; Pfeiffer, I, p. 115, pl. 5, f. 9, 10; Draparnaud, Moll., pl. 11, f. 4; Rossmassler, I, pl. 3, f. 71, *a, b*; Ib., III, p. 23, pl. 13, f. 197; Ib., IX and X, p. 10, pl. 45, f. 587 to 590; *Unio rostratus*, Pfeiffer, I, p. 114, pl. 5, f. 8; *Mya pictorum*, Sturm, Fauna, VI, p. 2, f. *a*; Schroeter, Flussconch., pl. 4, f. 6; Wood, Conch., p. 104, pl. 19, f. 3, 4; Donovan, Brit. Sh., III, pl. 89; *Mya ovalis*, Montagu, Test. Brit., p. 34; *Mysca pictorum*, Turton, Man., p. 20, pl. 2, f. 11; Gray's Turton, p. 295, pl. 2, f. 11, badly figured.

Shell thin, transversely oblong-oval, ventricose; umbones a little produced, and placed near to the anterior side, which is short, and rounded; posterior side elongated, and somewhat

pointed; hinge line slightly bent; basal line nearly parallel, and a little hollowed in the centre; hinge furnished with a strong, double, compressed, elevated, elongated, crested, crenated, cardinal tooth in the left valve, with a perpendicularly papillose, striated cleft on the side of its posterior portion, on which the tooth of the opposite valve rests, which locks into a space above the shorter cardinal tooth in the opposite valve; lateral teeth in both valves long, narrow, and sunk at the umbones,—from whence they take their rise,—becoming more elevated and acute as they diverge, and extend the same length as the ligament; inside highly pearlaceous; varying in different specimens from bluish-white to a rich salmon-colour, with faint, nearly obsolete radiations, extending from the umbones to the margins; pallial impressions well marked; anterior muscular impressions very deep; posterior ones distinctly defined; outside covered with a smooth, shining, yellowish-green epidermis, but varying in colour from different localities; with very indistinct, nearly obsolete, divergent grooves, radiating from the umbones to the margins; and with transverse, concentric, slight furrows, and very irregular, transverse striæ, most conspicuous towards the sides.

Fig. 11, pl. XXXI, is an external view of the teeth of the hinge.

Found in the river Ouse, at York; the Aire, near Gargrew; the Severn, near Shrewsbury; in the Aire, near Skipton; the Avon, near Leamington, Warwickshire; and several other slow running rivers and lakes in Britain.

*Variety 1*, pl. XXXI, f. 7 and 10.

Rossmassler, III, p. 23, pl. 13, f. 196; Ib., I, p. 118, pl. 3, f. 71, *a, b*.

The length somewhat more than two-fifths of its breadth; thickness a third more than its length. This is the ordinary form of the species.

Found in the Ouse, at York; the Severn, near Shrewsbury; the canal, near Birmingham; and Sir Oswald Mosley, Bart., sent me some beautiful specimens, from the lake at Rolleston, with the insides of a rich nacre, pale salmon-colour. In this locality they grow to a very large size, measuring an inch and three-quarters in length, and upwards of four inches in breadth.

*Variety 2*, pl. XXXI, f. 8.

Rossmassler, I, p. 117, pl. 3, f. 70, *a*, *Unio tumidius*.

The posterior side more pointed, that side gradually diminishing both above and below, from the umbones. Length five-tenths of its breadth; thickness half its length; cardinal and lateral teeth longer and more prominent than in the first variety.

Inhabits the Aire, near Gargrew; and the river Brothay, which empties itself into Windermere, near Ambleside.

*Variety 3*, pl. XXXI, f. 9.

Considerably longer than the former two varieties, being nearly a third, in proportion to its breadth; the umbones more central and prominent; and somewhat more inflated.

Found in the Don, at Sheffield.

2. UNIO DESHAYSII, pl. XXXII, f. 1, 2, 3, 4.

*Unio Deshaysii*, Rossmassler, III, p. 23, pl. 13, f. 197; Gibson, MSS.

Shell thickish, much elongated transversely; hinge line slightly curved; basal line nearly parallel, slightly waved in the centre,

ascending rather abruptly towards the posterior side, and forming a subrostrated termination; umbones prominent, placed very near the anterior side, which is short, and rounded; posterior side slightly gaping, much elongated, but not subrotund and subangulated; produced by the somewhat elevated ridge, which diverges from the umbones to the extreme point of the valve; cardinal teeth small, compressed, minutely serrated; double, and lamelliform, elongated in the left valve, with a deep, perpendicularly sulcated sinus in its side, for the reception of the tooth of the right valve; the portion of the tooth next the umbo somewhat acute; lateral tooth long and double in the left valve, single and sunk towards the umbo, and nearly parallel; lateral tooth of the right valve single, depressed towards the umbo, but ascending, and more acute, as it diverges from the umbo; inside bluish-white, and iridescent; muscular impressions very deep; pallial impression well defined; outside of a dark olive-green, and with rather deep, concentric wrinkles.

Figs. 3 and 4, pl. XXXII, exhibit the external and internal appearance of the teeth.

This species differs from *U. pictorum*, in its general length being more uniform, and in being broader at the posterior side, and less acute; in the teeth being much smaller, and less elevated, as well as in the crenulations on their upper side being less distinct, and less regular; in the shell being much thicker, and its posterior side being considerably shorter.

Found in the Wharf, near Ottley; the Aire, near Keighley; the Wharf, near Bolton Bridge; and the Don, near Sheffield.

### 3. *UNIO ROSTRATA*, pl. XXXII, f. 9, 10, 11, 12.

*Unio rostrata*, Kokeil Museum; Alder, Mag. Zool. and Bot., II, p. 118; Lamarck, An. San. Vert., VI, pt. 1st, p. 77, No. 31; *Unio elongatata*, Pfeiffer, II, p. 35, pl. 8, f. 5, 6; *Unio pictorum*, var., Nilsson, I, p. 118, f. f; Ib., III, p. 23, f. f; Rossmassler, VI, p. 55, pl. 29, f. 409.

Shell greatly elongated transversely; umbones very flat, placed near the anterior side; hinge line but very little arcuated, as far as the extremity of the lateral teeth, from whence it suddenly slopes both above and below, terminating in a somewhat rostrated form; basal line nearly parallel; primary teeth rather thick, and serrated at the edge; lateral teeth long, and considerably elevated; anterior muscular impression moderately sized, and deeply sunk; below the umbones, there are indications of remote, nearly obsolete striæ; internal surface of a bluish-white, with iridescent reflections. Length not a third of its breadth; thickness four-fifths of its length.

Figs. 11 and 12, pl. XXXII, external and internal representation of the teeth.

This shell tapers more abruptly in thinness towards the posterior side, than any of its British congeners; and is considerably more obtuse at its anterior side, than the *U. pictorum*; but its much more elongated form, will at once distinguish it from that shell.

I found this species in the canal, near Hull; and William Thompson, Esq., of Belfast, procured it in the Avon, near Leamington.

### 4. *UNIO TUMIDUS*, pl. XXXII, f. 5, 6, 7, 8.

*Unio tumidus*, Retzius, Nova Testaceor. Genera, p. 17, No. 3; *Unio tumida*, Pfeiffer, II, p. 34, pl. 7, f. 2, 3, and pl. 8, f.

1, 2; Rossmassler, II, p. 117, pl. 3, f. 70 b; Ib., III, p. 27, pl. 3, f. 202, 203; Alder, Mag. Zool. and Bot., II, p. 118; *Mysca solida*, Turton, Man., p. 22, pl. 2, f. 13; Ib., Conch. Dict., p. 246, pl. 16, f. 2.

Shell very thick, solid, cuneiform, transversely oblong-ovate, much inflated; umbones produced, and placed very close, situate near one extremity; anterior side short, rounded; posterior side long, gradually sloping from the umbones both above and below, and terminating in a subtruncated beak; cardinal tooth large, single, thick, elevated, and finely serrated at the edge, in the right valve, and double in the opposite valve; muscular impressions small, and deeply sunk both before and behind; pallial impression strongly defined; external surface with rather strong, concentric wrinkles, and the whole of a reddish-brown, slightly tinged with olivaceous-green; inside white, with but little iridescent lustre. Length half its breadth; thickness four-fifths of its length.

Figs. 7 and 8, pl. XXXII, external and internal representation of the teeth.

Found in the New River, near London; and the Avon, near Leamington, Warwickshire.

### 5. *UNIO OVALIS*, pl. XXXI, f. 12, 13, 14.

*Unio ovalis*, First Ed., pl. 26, f. 2; Leach, MSS., p. 10; *Mya ovalis*, Montagu, Test. Brit., p. 563; *Mya depressa*, Donovan, Brit. Sh., III, pl. 101; *Mya ovata*, Donovan, Brit. Sh., IV, pl. 122, f. 1, 2, 3; *Mysca ovata*, Turton, Man., p. 21, pl. 2, f. 12; *Mysca solida*, Turton, Biv., p. 246, pl. 16, f. 2; *Unio tumidus*, Rossmassler, I, pl. 14, f. 204; *Unio tumidus*, var., Rossmassler, VIII, p. 41, pl. 40, f. 542.

Shell strong, thick, transversely ovate; hinge line arcuated; umbones prominent, wrinkled, and closely approximate; right valve with a strong, double, erect, cardinal tooth, the higher portion situate immediately below the umbo, considerably elevated above the margin, and two long, oblique, lateral teeth; muscular impressions of moderate size, the anterior ones deep; pallial impression deeply defined; left valve with a single, erect, oblique, cardinal tooth, and a long, elevated, lateral tooth, which fits into the cleft between those of the opposite valve; inside iridescent, and of a pale reddish-salmon colour, and the posterior side of the valves often rough and irregularly wrinkled; outside usually with strong, concentric lines of growth, which are often foliaceous at the posterior side, and of an olivaceous-brown colour; the umbones generally redder, and frequently with longitudinal radiations of pale yellow, or buff. Length upwards of three-fifths of its breadth; thickness not two-fifths.

Fig. 14, pl. XXXI, external representation of the teeth.

This species will be distinguished from the *tumidus*, by its more oval form, and in the posterior side being less produced, as well as by its teeth being thicker, the central portion of that in the right valve not so acutely notched on its edge, and rather more elevated; and the shell is much less inflated.

Found in the Aire, near Skipton; the Ouse, above York; the Severn, near Shrewsbury; at Kirkstall Bridge, near Leeds; and in the canal, near Burnley.

### 6. *UNIO BATAVUS*, pl. XXXI, f. 3, 3,\* 4, 5, 6.

*Unio Batavus*, First Ed., pl. 26, f. 3; Lamarck, An. San. Vert., VI, pt. 1st, p. 78, No. 33; Nilsson, p. 112, No. 8; Pfeiffer, I, p. 115, pl. 5, f. 14; Rossmassler, II, p. 20, pl. 8, f. 128,



*a, b*; Drapernaud, pl. 11, f. 3; *Mya pictorum*, Donovan, Brit. Sh., pl. 174; Wood, Conch., p. 403, pl. 19, f. 1, 2; *Mysca Batava*, Turton, Man., p. 20, pl. 2, f. 10.

Shell inflated, oval; hinge line subarcuated; posterior side but very slightly produced; umbones rounded, placed near to one side, and a little apart from each other; anterior muscular impressions small, and deep; pallial impression but slightly defined; inside of a rich pearly lustre; exterior surface of a yellowish-green, frequently beautifully radiated with darker green; lines of growth not deep; basal line arcuated. Length three-fifths of its breadth; thickness upwards of two-fifths.

Figs. 4 and 5, pl. XXXI, external and internal view of the teeth.

This shell is easily distinguished by its more regularly oval form, and smaller size, seldom exceeding an inch and a quarter in length. Found in the river Kennet, above Newbury.

### GENUS 3.—ALASMODON.—Say.

Shell thick, generally transversely elongate, but variable in form, equivalve, inequilateral; a little gaping posteriorly; with or without auricles; umbones for the most part rough, and decorticated, more so anteriorly; hinge with a lamellar, blunted, lateral tooth on the posterior side, situate under the ligament, but destitute of one on the anterior side; a short, irregularly indented, cardinal tooth in the right valve, which locks between the two irregularly crested teeth in the left valve; ligament exterior, and much elongated; muscular impressions large, irregular, frequently double, and placed near the extremities; pallial impression deeply defined.

1. *ALASMODON MARGARITIFERUS*, pl. XXXI, f. 1, 2; pl. XXXII, f. 13, 14, 15; and pl. XXX,\* f. 1, 2, 3, 4.

*Variety 1.* Ordinary form, pl. XXXI, f. 1, 2.

*Alasmodon margaritiferus*, Fleming, Brit. An., p. 417; *Unio margaritiferus*, Nilsson, p. 106, No. 2; Turton, Conch. Dict., p. 202, pl. 16, f. 1; Ib., Man., p. 19, pl. 2, f. 9; Ib., Brit. Biv., p. 242, pl. 16, f. 1; Rossmassler, I, p. 120, pl. 4, f. 72, 73; Thompson, Ann. and Mag. Nat. Hist., VI, p. 55; *Unio margaritifera*, Drapernaud, p. 132, pl. 10, f. 17, 18, 19; Pfeiffer, I, p. 116, pl. 5, f. 11; *Unio elongata*, Lamarek, An. San. Vert., VI, pt. 1st, p. 70; *Damaris margaritifera*, Leach, MSS., p. 10; *Mya margaritifera*, Müller, Verm., II, p. 210, No. 396; Montagu, Test. Brit., p. 33; Donovan, Brit. Sh., pl. 73; Penant, Brit. Zool., IV, p. 80, pl. 43, f. 18; Brown, Wernerian Mem., II, p. 505; Ib., Ency. Brit., 1st Ed., VI, p. 405; Ib., Ency. Edinensis, II, p. 542.

Shell transverse, oblong-ovate; hinge line considerably arcuated; basal line concave; umbones flat, rugged, much decorticated, and frequently with small, round perforations; an obsolete, gradually widening hollow, extends from the umbones to the base, in both valves; anterior side very short, and rounded; posterior side much elongated, and pointed; surface covered with a brownish-black, strong epidermis; teeth of the hinge strong, thick, subconic; right valve with a single tooth, notched on both sides, which locks into a bifurcated, notched tooth in the opposite valve; muscular impressions near both extremities, and are deep and complicated; pallial impression very distinctly defined, and deeply marked towards the anterior side; interior pearly, with irregular streaks of green, and frequently bronzed; towards the centre are from twenty to

thirty irregular, rather deep, nearly round punctures, of the size of the head of a small pin. Length upwards of two inches and a half; breadth five inches and a half.

Found in the rivers Aun and Avon, Devonshire; the Conway; the Irt, Cumberland; the Lune, Lancashire; the Tay and Forth, in Scotland; the Tyrone, Bann, and Slaney, Ireland; and various other localities in Britain and Ireland.

This shell is familiarly known by the name of the Pearl Muscle. In a Paper on Pearls in the Philosophical Transactions, it is mentioned that several pearls of considerable value have been procured from the *Alasmodon margaritiferus*, which have been found in the rivers Tyrone and Donegal, Ireland. One of them weighed thirty-six carats, and would have been worth £40., but owing to its being impure, it lost much of its value. Other pearls, from the same places, have sold for from £4. 10s. to £10. One at the last named price was bought by Lady Glenleah, who had it placed in a necklace, and refused £80. offered for it by the Duchess of Ormond. We are told by Camden, that Sir John Hawkins had a patent for fishing pearls in the river Irt, Cumberland. There was also a great fishery for pearls in the river Tay, Scotland, which extended from Perth to Loch Tay; and, it is said, the pearls sent from thence to London, from the year 1761 to 1764, were worth £10,000. sterling. It is not uncommon at the present time to find pearls in the Teith and Tay, worth from £1. to £2. each.

*Variety 2.* ROISSYI, pl. XXXII, f. 13, 14, 15, and pl. XXX,\* f. 4.

*Unio Roissyi*, Michaud, Compl., p. 112, pl. 16, f. 28; Proceedings Brit. Assoc. for 1838; *Unio margaritifer*, Rossmassler, I, pl. 4, f. 74; Forbes, Mal. Mon., p. 44; Fleming, p. 417; Thompson, Ann. and Mag. Nat. Hist., VI, p. 56.

This variety differs from the common form in the following particulars. The shell is much longer, in proportion to its breadth; it is more uniformly ovate, the teeth somewhat more elevated; the exterior covered with very fine, transverse striæ, the epidermis blacker, and general surface more smooth; the hinge and basal lines less arcuated, interior more of a reddish-blush, or flesh-colour, and the shell considerably thinner than in the ordinary form; the muscular impressions are smaller, and less deep; the punctures are situate nearer the umbones, are elongated, and not deeply sunk, being more lacrymose in their appearance.

Figs. 13, 14, and 15, pl. XXXII, are the Isle of Man variety, and f. 4, pl. XXX,\* is from the Teith.

This form inhabits the Teith, at Callander, Perthshire. Forbes has found this elegant variety in the Black river, near Kirk Bradden Church, and at Castleton, Isle of Man, where it is common. He says "it was formerly much sought after by the inhabitants for the sake of the pearls, which it not unfrequently contains." Mr. Thompson says this variety is common to several localities in Ireland.

*Variety 3.* MINOR, pl. XXX,\* f. 2.

*Unio margaritifera, minor*, Rossmassler, II, p. 21, pl. 9, f. 129; Nat. Michaud.

Shell small, subcompressed; valves very thick; the cardinal teeth compressed, and small; general form like variety 1. Seldom exceeding an inch and a half in length; and three inches and a half in breadth.

Inhabits the Mint, near Kendal.

Rossmassler is wrong in supposing that this variety belongs to the form *Roissyi*.

I am indebted to the kindness of Miss Ellen T. Thomson, of Stricklandgate, and Thomas Gough, Esq., surgeon, Kendal, for specimens and a knowledge of this variety.

*Variety 4.* ARCUATA, pl. XXX,\* f. 3.

Shell small, subdepressed, thick; hinge line considerably arcuated; ligament prominent; basal line greatly curved; cardinal tooth in one valve very large; lateral sinus arcuated, and broad as it retires from the cardinal tooth; muscular impressions deep.

Found in the river Derwent, Bassenthwaite, Cumberland, a little way below Ouse Bridge.

*Variety 5.* OLIVACEA, pl. XXX,\* f. 1.

Small; substance of the shell thick, rather inflated; hinge line nearly parallel; basal line with a flexure, and a very little arcuated; valves with a slightly hollowed, longitudinal, gradually widening furrow, from the umbones to the basal margin; outer surface olivaceous, with irregular, transverse furrows; umbones much decorticated, which extends nearly to the dorsal extremity of the valves; inside of a dull flesh-colour, slightly naced towards the dorsal side; teeth small, distinctly tripartite in the left valve, and very small and single in the other.

This very curious variety was discovered by Thomas Glover, Esq., of Smedley Hill, in the Leven, a little way below the lake of Windermere, Westmoreland.

#### FAMILY II.—ARCACEA.

Shells provided with numerous small primary teeth, disposed in a straight or interrupted line in each valve.

#### GENUS 4.—NUCULA.—Lamarck.

Shell equivalve, inequilateral, transverse, oval, trigonal, or oblong; generally covered with an epidermis; hinge linear, narrow, divided into two parts by an oblique, produced, nearly central pit, which is destined for the reception of the ligament, the one anterior and the other posterior; lateral teeth on each side numerous, acute, elevated, somewhat recurved, those of the opposite valve locking into the intervening spaces; umbones contiguous, and not separated by an intervening area; two simple muscular impressions; mantle impression destitute of a sinus.

##### *Section I.—Shells oblong-ovate.*

1. NUCULA ROSTRATA, pl. XXXIII, f. 16.

*Nucula rostrata*, First Ed., pl. 25, f. 16; *Arca rostrata*, Ency. Meth., pl. 309, f. 7, *a, b*; Montagu, Sup., p. 55, pl. 27, f. 7; Turton, Conch. Dict., p. 11; Ib., Brit. Biv., p. 178; Lamarck, VI, pt. 1st, p. 58.

Shell transversely oblong-ovate, somewhat convex, and rather thin; smaller side produced into an arcuated, beak-like form, which is provided with three transverse ribs; umbones nearly central, approximate, somewhat inclined to the smaller side; external surface pale horn-coloured, and a little glossy, with strong, regular, undulating, diagonal striæ, which make an abrupt, angulated turn across the ribs of the beak, terminating

where the ribs of the beak commence; these are crossed by extremely minute, irregular, transverse striæ, which, however, can only be seen by the aid of a strong lens, and appear more like the scratches of a file than striæ; teeth strong, regular, and angulated, those on each side of the hinge pit with their angular sides turned towards it; inside very glossy and white. Length not quite half an inch; breadth three-quarters.

Found off St. Abb's Head, Frith of Forth, by Captain Laskey; and I met with an odd valve at Holy Island.

2. NUCULA MINUTA, pl. XXXIII, f. 18.

*Nucula minuta*, First Ed., pl. 25, f. 18; Turton, Biv., p. 178; *Arca minuta*, Montagu, p. 140; Brown, Wernerian Mem., II, p. 512; *Arca caudata*, Donovan, III, pl. 78; *Arca modiolus*, Walker, p. 23, f. 81.

Shell transversely oblong-ovate; anterior side produced into an angulated, arcuated beak, which is square at the point; posterior side rounded; umbones small, pointed, and turned towards the anterior side, with a small spindle-shaped depression under them, reaching to the point of the beak, and being indented, gives a reflexed appearance; teeth numerous, sharp, and prominent; external surface yellowish or pale olive-green, covered with fine, distant, regular, transverse striæ, and three or four concentric ridges, according to the age of the shell; inside smooth, glossy, and of a bluish-white or pale purple; margin plain. Length three-eighths of an inch; breadth somewhat more than half an inch.

Found at Sandwich; Tenby; Dublin Bay and Portmarnock, Ireland; and Frith of Forth, Scotland.

3. NUCULA OBLONGA, pl. XXXIII, f. 17.

*Nucula obsoleta*, First Ed., pl. 25, f. 17.

Shell oblong-ovate; anterior side produced into a straight, but slightly narrowed beak, with two shallow furrows running from the apex to the point, which is slightly rounded; posterior side rounded; umbones straight, very blunt, and placed near the posterior side; exterior surface of a dark olive-green, with nearly obsolete, transverse striæ; teeth strong, regular, prominent, and triangular; cartilage cavity spoon-shaped, and sloping downwards; inside smooth, and white; muscular impressions large; a slight groove emanating below the umbones, terminates on the margin at the beaked side. Length upwards of half an inch; breadth upwards of seven-eighths.

Discovered by Stewart Ker, Esq., at Greenock, and on the beach of the opposite shore, where it is not uncommon.

4. NUCULA TRUNCATA, pl. XXXIII, f. 19.

*Nucula truncata*, First Ed., pl. 25, f. 19.

Shell ovate, somewhat beaked at its anterior side above, with an oblique truncation below the projecting point; umbones rather prominent, rounded, and nearly central; outside of a dark olive-green, beset with numerous, extremely fine, close, considerably undulated, transverse striæ, and with exceedingly fine, minute, longitudinal striæ, which can only be seen by the aid of a lens; inside smooth, white; hinge with about thirty sharp, elevated, and somewhat imbricated teeth; cartilage socket nearly round, sloping downwards, and almost concealed below the umbones. Length not quite half an inch; breadth about three-quarters.

Discovered by Stewart Ker, Esq., at Greenock, and near Ardenapple, where it is not uncommon.

## Section II.—Shells suborbicular.

## 5. NUCULA MARGARITACEA, pl. XXXIII, f. 12.

*Nucula margaritacea*, First Ed., pl. 25, f. 12; Lamarek, VI, pt. 1st, p. 59; Forbes, p. 43; *Nucula nucleus*, Turton, Biv., p. 176, pl. 13, f. 4; *Arca nucleus*, Pennant, IV, p. 217; Montagu, p. 141; Donovan, II, pl. 63.

Shell thick, inflated, obliquely ovate, slightly subtrigonal; umbones rather prominent, placed nearest the posterior side; beneath them a cordiform depression; colour olive, of various shades in different individuals, and very glossy; with numerous, concentric, nearly obsolete wrinkles, crossed by numerous, fine, interrupted striæ; inside of a glossy, highly nacreous silvery white; hinge angular, with numerous, upright, sharp teeth, extending considerably above the hinge lines; margin minutely crenulated. Length half an inch; breadth somewhat more.

Found on the Devonshire, Welsh, and Yorkshire coasts; also in many parts of Scotland; Dublin Bay, Portmarnock, Bray, and the Downshire coast, Ireland.

## 6. NUCULA ARGENTEA, pl. XXXIII, f. 14, 15.

*Nucula argentea*, First Ed., pl. 25, f. 14, 15.

Shell obliquely ovate, very glossy, and smooth; colour olivaceous; umbones placed much to the posterior side, with a cordiform depression beneath; inside glossy, silvery white; hinge with twelve rather strong, regular, upright teeth; margins with very fine crenulations. Length and breadth not quite a tenth of an inch.

One valve only of this shell was discovered at Dunbar, by General Bingham, and is in his cabinet. It has all the appearance of the fry of *N. margaritacea*, but differs from it in the following particulars, viz.: in its subovate form; having no longitudinal striæ; hinge line gradually curved, and not triangular, as is *N. margaritacea*; ligament pit in a line with the teeth, and does not project beyond them; and the teeth are less numerous.

## 7. NUCULA TENUIS, pl. XXXIII, f. 13.

*Nucula tenuis*, First Ed., pl. 25, f. 13; Turton, Biv., p. 177; *Arca tenuis*, Montagu, Sup., p. 56, pl. 29, f. 1.

Shell somewhat ovate, and convex, smooth, and very glossy; of a pale olivaceous colour, with a few concentric, nearly obsolete wrinkles; umbones rather small, prominent, reflected, and placed nearest the posterior side, with a slight cordiform depression under them; inside smooth, white, and somewhat nacreous; margin thin, entire, and divested of crenulations; hinge with about sixteen elevated, imbricated teeth, ten on the one side of the cartilage pit, and six on the other; cartilage socket projecting inwards. Length not a quarter of an inch; breadth a quarter.

Found in the Frith of Forth; the estuary of the Clyde; and the coast of Downshire, Ireland.

## GENUS 5.—PECTUNCULUS.—Lamarek.

Shell orbicular, subequilateral, with the valves close; umbones near to each other, and separated by a narrow facet, or area; hinge semicircular; teeth numerous, arcuated, oblique, serrated, placed in two rows, one on each side of the umbones, and separated by a small triangular disk in each valve, which contains the ligament, those of the opposite valves alternately lock between each other, and becoming nearly obsolete towards the

umbones; two lateral, strongly marked, distant, muscular impressions, which are united by an interrupted pallial impression; ligament external.

## 1. PECTUNCULUS PILOSUS, pl. XXXIII, f. 10, 11.

*Pectunculus pilosus*, First Ed., pl. 25, f. 10, 11; Lamarek, VI, pt. 1st, p. 49; Turton, Biv., p. 172, pl. 12, f. 2; Fleming, p. 400; Forbes, p. 42; *Pectunculus undatus*, Turton, Biv., p. 173, pl. 12, f. 3, 4; *Arca pilosa*, Montagu, p. 136; Ib., Sup., p. 53; Maton and Rackett, Linn. Tr., VIII, p. 94, pl. 3, f. 4.

Shell orbicular, strong; surface pale reddish-brown, or white; with zigzag, angular, stripes of dark chestnut, or reddish-brown, frequently of a flesh-colour in young shells, with fine, longitudinal striæ, and transverse, irregular wrinkles; above which the surface is covered with a dark brown, pilous epidermis, which is generally extremely thin, or none, near the umbones, and thicker and longer towards the margins and base of the valves; umbones large, central, and rounded, inclining slightly towards each other, and separated by a polygonal, dark blackish-brown area; inside white, or slightly tinged with purple near one side; margin strongly crenated. Diameter two inches and a half, sometimes more.

In the young condition the surface is distinctly decussated, but the transverse striæ become obsolete as they advance in growth. The *P. decussatus* of Turton is merely the young of this species.

Found on the south coast of Devonshire, Weymouth, and the Kentish coast. Professor Forbes dredged it of a large size in the Irish Channel, off the Manx coast, where it is plentiful. He particularises the coast off Douglas Head, as being a locality where it is abundant.

## 2. PECTUNCULUS GLYCIMERIS, pl. XXXIII, f. 8, 9.

*Pectunculus Glycimeris*, First Ed., pl. 25, f. 8, 9; Turton, Biv., p. 171, pl. 12, f. 1; *Arca Glycimeris*, Maton and Rackett, Linn. Tr. VIII, p. 93, pl. 3, f. 3.

Shell orbicular, convex, thick, strong; umbones distant, round, and pointing towards each other; hinge line with a polygonal area of a deep brown colour, but not striate; whole surface of a pale yellowish-white, with nearly obsolete, wide-set, longitudinal, and transverse striæ, irregularly and remotely spotted with yellowish-brown; covered with a dark, subpilous epidermis; margin strongly crenated, and acute at the edge; cardinal teeth transverse, about ten in number. Diameter two inches and one-eighth, and upwards.

Distinguished from the *P. pilosus* by being much more ventricose, in the teeth being fewer in number, and with the epidermis less pilous than in that shell.

Found on the Western coasts, Cornwall, and British Channel, but is very rare.

## GENUS 6.—ARCA.—Linnaeus.

Shell transverse, or subequivalve, inequilateral, trapeziform, or subquadrate; slightly ventricose; some species greatly ventricose; generally angular at both ends of the hinge line, much rounded in some species; umbones small, remote, separated by the area, to which the external ligament is affixed; hinge line rectilinear; teeth numerous, small, serrated, close-set, alternately inserted in the opposite valves; two lateral and distant muscular impressions; ligament external.



1. *ARCA NOÆ*, pl. XXXIII, f. 1, 2, 3.

*Arca Noæ*, First Ed., pl. 25, f. 1, 2, 3; Linné, Syst. Nat., p. 1140, No. 169; Lamarck, VI, pt. 1st, p. 37; Montagu, p. 139, pl. 4, f. 3, 3; Donovan, V, pl. 158, f. 1, 2; Turton, Biv., p. 166; Fleming, p. 397.

Shell rhomboidal, cymbiform; the smaller end of each valve turning inwards to meet each other; umbones situate nearest to one side, separated by a pretty wide cardinal area, which is smooth and glossy; apex prominent, slightly inflected; hinge parallel, with numerous teeth, those in the centre perpendicular, and oblique towards the sides; external surface with numerous, longitudinal, divergent striæ, which emanate at the apex, and terminate on the margins, those on the narrower side wider and stronger, assuming nearly the aspect of ribs, the whole crossed by fine, transverse striæ, producing an elegant reticulated appearance; colour rufous-brown; inside white, or slightly tinged with purplish-brown, with the margins slightly crenated.

Found on Milton Sands, south coast of Devon; at Land's End, Cornwall; and also at Guernsey.

2. *ARCA FUSCA*, pl. XXXIII, f. 4, 5.

*Arca fusca*, First Ed., pl. 25, f. 4, 5; Lamarck, VI, pt. 1st, p. 39; Donovan, V, pl. 158, f. 3, 4; Montagu, Sup., p. 51; Turton, Biv., p. 167; Fleming, p. 397.

Shell cymbiform, transversely elongated; umbones prominent, rounded, obtuse, and somewhat remote, being separated by a pretty broad, flat, cardinal area, and situated nearer one end; whole outer surface fuscous-brown, covered with fine, divergent, longitudinal striæ, which are decussated by transverse, sharp striæ; posterior side somewhat truncated; inside glossy, and white; margin with very fine crenulations.

Found at Cornwall and south coast of Devon. Lady Jardine possesses a specimen which was found near Weymouth.

This shell differs from *A. Noæ* in being longer in proportion to its breadth, in the striæ being finer, and the colour more of a yellowish-brown.

3. *ARCA LACTEA*, pl. XXXIII, f. 6.

*Arca lactea*, First Ed., pl. 25, f. 6; Lamarck, VI, pt. 1st, p. 40; Montagu, p. 138; Donovan, IV, pl. 135; Fleming, p. 398; *Arca perforans*, Turton, Biv., p. 169, pl. 13, f. 23.

Shell subrhomboidal, rounded at both extremities; umbones not quite central, blunt, and placed somewhat remote; cardinal area smooth; hinge parallel, with numerous teeth; outer surface covered with a pilous, pale yellowish-brown epidermis, beneath which the shell is milk-white, with numerous, close-set, regular, longitudinal striæ, the interstices between the striæ finely punctured, producing the appearance of being reticulated, when viewed through a lens, crossed by a few concentric wrinkles, or lines of growth; inside white, with a plain margin. Length half an inch; breadth three-quarters.

The sides in the young shells are for the most part oblique, and subtruncated, and assume a more rounded form as the shell advances in growth; some specimens have also transverse striæ, which, however, is but of rare occurrence.

Found plentifully on the Devonshire and Cornwall coasts.

4. *ARCA BARBATA*, pl. XXXIII, f. 7.

*Arca barbata*, First Ed., pl. 25, f. 7; Brown, Wernerian Mem., II, p. 512, pl. 24, f. 3; Lamarck, VI, pt. 1st, p. 59; Fleming, p. 398; *Arca reticulata*, Turton, Biv., p. 168.

Shell transversely elongated, strong, white, very finely reticulated; covered with a reddish-brown epidermis; from the umbones to the margin diverge a number of nearly equidistant, flat ridges, covered with very fine, short, and thick-set brown hairs; all round the margin it is beset with a byssus of rather long, stiff bristle-like hairs; in the hollows at the anterior and posterior sides, it is thickly covered with bristles of a very dark umber-brown, rather small at the umbo, and increase in size as they diverge from it on both sides, and oblique in opposite directions; inside moderately glossy, growing dimmer as it approaches the umbones of the shell, white, with pale glossy rays, and clouded with pale chestnut; margin finely crenulated. Breadth nearly double its length.

Discovered in Lough Strangford, County of Down, Ireland, by Dr. Macgee, of Belfast.

5. *ARCA TETRAGONA*, pl. XXXIII, f. 20, 21.

*Arca tetragona*, Forbes, Mal. Mon., p. 41; Poli, p. XXV, pl. 25, f. 13?

Shell transversely oblong, obliquely quadrangular, very tumid; an oblique rib takes its rise at the umbo, and terminates on the anterior side; umbones but slightly produced, and very remote, separated by a very large, flat, nearly lozenge, cardinal area, from the sinistral side of which it suddenly sinks, forming an acute angle, by the meeting of the arcuated basal line; cardinal area with a large lozenge impression, subquadrangularly striate, the lines of the one valve meeting those of the other; whole surface with longitudinal and transverse striæ; colour brownish-white; covered with a thin, pilous epidermis, and fringed round the margins of the valves, which are longer at the beak; basal margin provided with a large, central, oblong, lozenge hiatus, for the passage of the byssus; inside white, tinged with purple at one side; hinge line straight, with many teeth, which are numerous posteally and few anteally, the margin with fine crenulations.

Found in the Calves on the West coast of Ireland, where it burrows in hard clay and limestone rocks; and dredged by Professor Forbes off the coast of Ballaugh, Isle of Man. I obtained it from Mr. Richardson, with one of the specimens, embedded in limestone.

## FAMILY III.—CARDIACEA.

Primary teeth irregular both in form and situation, and in general accompanied by one or two lateral teeth.

## GENUS 7.—ISOCARDIA.—Lamarck.

Shell equivalve, heart-shaped, ventricose; beaks very distant, divergent, and involute; hinge with two primary compressed teeth in each valve, the one next the apex inflected under the umbo, and with one elongated, lateral tooth, situate immediately before the ligament, which is external, and divided into two ligaments at its posterior extremity, both of which are divergent to the point of the beak in each valve; both valves provided with two lateral, remote, muscular impressions, the linear impression of the mantle is entire, and extending from one muscular impression to the other.

1. *ISOCARDIA COR*, pl. XXX, f. 9, and pl. XXX,\* f. 5.

*Isocardia Cor*, First Ed., pl. 23, 24; Lamarck, VI, pt. 1st, p. 31; Turton, Biv., p. 193, pl. 14; Fleming, p. 419; *Chama*

*Cor*, Montagu, p. 134 and 578; *Ib.*, Sup., p. 50; Donovan, IV, pl. 134; Laskey, Wernerian Mem., I, p. 385, pl. 8, f. 7; Brown, Wernerian Mem., II, p. 511 and 535.

Shell subglobose, much inflated, heart-shaped, strong; with strong, irregular, transverse wrinkles, increasing in coarseness and elevation as they approach the base of the valves; covered with a dark brown, or reddish-brown epidermis; umbones large, greatly contorted, the beaks pointed upwards, much turned to one side, considerably apart from each other, and a somewhat hollowed space below them, on each side of the junction of the valves; inside dull yellowish-white, frequently tinged with pale flesh-colour, and pale buff; surface of large specimens rather uneven; margins smooth, and sharp on the edge; muscular impressions strongly marked, that on the left side deep; hinge with very prominent teeth, standing above the level of the valve; in the right valve an erect cardinal and a longitudinal tooth, fitting into deep sockets in the opposite valve, which is provided with a double erect cardinal tooth.

Found in Bantry Bay, Dublin Bay, and Cove of Cork, Ireland; off St. Abb's Head, Scotland; and is said to inhabit the Hebrides.

#### GENUS 8.—CARDIUM.—Linnæus.

Shell equivalve, nearly equilateral, and more or less gaping posteriorly; generally with strong ribs, radiating from the umbones to the margins; inside of the lips crenulated, or dentated, corresponding in size to the ribs; two approximate, oblique, cardinal teeth in both valves, locking into each other crossways, and with two remote, lateral teeth in both valves; two lateral, distinct, muscular impressions in each valve; mantle impressions entire; liagment external.

1. *CARDIUM ACULEATUM*, pl. XXXIV, f. 1, 2, 3, 4, 5, and 7.

*Cardium aculeatum*, First Ed., pl. 21, f. 1, 2; Montagu, p. 77; *Cardium ciliare*, the young shell, Montagu, p. 79; Donovan, I, pl. 6; Fleming, p. 420; Turton, Biv., p. 180, pl. 13, f. 6, 7; Forbes, p. 45; Brown, Wernerian Mem., II, p. 508.

Shell suborbicular, very convex; anterior side rounded; posterior side subtruncated, produced at its lower marginal angle; with about twenty-one strong, longitudinal, square-sided ribs, emanating at the umbones and terminating on the margins, which are strongly scalloped, the termination of the ribs of one valve locking into the base of the furrows in the opposite one; each rib with a central, longitudinal sulcus, in which are planted numerous, short, compressed, arcuated spines, these are longer and more acute on the sides of the valves; outside of a yellowish-brown colour, with transverse, distant, broad bands of brown, and generally darker in the sulci, which are deep and transversely striated; inside glossy, yellowish, flesh-coloured, or purple, with flattened ribs, caused by the external furrows being raised internally, the interstices between the ribs white, are of a paler hue than the rest of the interior. Diameter nearly four inches.

Inhabits the South Devonshire coast; Dowlish, Warren, Torcross, the Hebrides, and Orkney Islands; Dublin Bay and Portmarnock, Ireland.

Figs. 3, 4, 5, and 7, the young shell; the latter is *Cardium ciliare* of Donovan and Montagu.

2. *CARDIUM ECHINATUM*, pl. XXXIV, f. 6 and 8.

*Cardium echinatum*, First Ed., pl. 21, f. 6 and 8; Montagu, p. 78; Turton, Biv., p. 183; Fleming, p. 421; Brown, Wernerian Mem., II, p. 509.

Shell suborbicular, very convex; umbones nearly central; with about eighteen longitudinal, somewhat wrinkled ribs, provided with a central series of numerous, close-set, convex spines, the intervening furrows deep, and transversely striated; the base of the ribs of one valve locking into the intervening furrows of the opposite valve; colour rusty orange-yellow; inside white, glossy, sometimes slightly tinged with yellow. Diameter two and a half inches.

This shell differs from *C. echinatum*, in being more orbicular, considerably less, the ribs rounder, the furrows more wrinkled, the spines not so long, and blunt at the points. It is common on all the coasts of Great Britain and Ireland.

Fig. 8, the young shell.

3. *CARDIUM TUBERCULATUM*, pl. XXXIV, f. 9.

*Cardium tuberculatum*, First Ed., pl. 21, f. 9; Lamarck, VI, pt. 1st, f. 8; Montagu, p. 79 and 568; Donovan, III, pl. 107, f. 2; Turton, Biv., p. 181; Fleming, p. 421.

Shell strong, ponderous, nearly globular; umbones large, much inflected; anterior side slightly flattened; posterior side well rounded; surface covered with about twenty-one rounded ribs, the anterior ones beset with short, rounded, blunt tubercles, and the posterior ones a little scaly; the intervening furrows roughly and irregularly striate transversely; colour of a pale rusty-brown; inside cream-white, with the ribs extending only half way up from the base of the valves. Diameter nearly four inches.

Inhabits the Sands at Falmouth, Cornwall, Paignton Sands, Torbay. It is, however, a rare British species.

4. *CARDIUM EDULE*, pl. XXXV, f. 1, 2, 3, 4, 5, 6, 7.

*Cardium edule*, First Ed., pl. 22, f. 1, 2, 3, 4, 5, 6, 7; Montagu, p. 76; Turton, Biv., p. 188; Fleming, p. 422; Forbes, p. 46; *Cardium rusticum*, Donovan, IV, pl. 124, f. 1, 2.

Shell yellowish-white, subglobose, oblique; with about twenty-six antiquated, longitudinal ribs, provided with numerous, transverse, scaly processes, and wide-set lines of growth; posterior end a little elongated; inside white; the muscular impressions, and produced side, frequently of a rusty-brown; the internal ribs reaching only about a fourth of the length of the shell from the margins, which are deeply scalloped.

This shell is common on almost all sandy shores in Great Britain and Ireland. It frequently grows to a large size, particularly in Orkney, where it often attains nearly two inches and a quarter in length. It is subject to considerable variety in its contour.

Figs. 5 and 6, the young shell. At the first stage it is nearly orbicular, which will at once distinguish it from the *C. fasciatum* and *C. exiguum*.

Fig. 2, the ordinary size of the shell.

Fig. 1, drawn from a specimen found at Waterford, Ireland.

Fig. 3, taken from a specimen obtained at the basin of Montrose, where it is the ordinary form; the transverse scales of the ribs of a reddish-brown.

Fig. 4, a very beautiful, thin variety, found in Lough Strangford, Ireland, generally of a rusty-brown colour.

Fig. 7, *Cardium rusticum* of Donovan.

5. *CARDIUM ZONATUM*, pl. XXXV, f. 8.

*Cardium zonatum*, First Ed., pl. 22, f. 8.

Shell nearly globular, thin; with numerous, longitudinal ribs, crossed by close-set, scale-like processes; the umbones nearly central, and obtuse; external surface pale gamboge-yellow, or sulphur-colour, with pretty broad, transverse bands of dull green, sometimes with purple bands; inside white, tinged with purple; cardinal teeth large, and acute. Diameter not an inch.

This species was first detected by my late friend Mr. Hancock, of Newcastle, at Seaton, in Yorkshire, and afterwards by my late friend Dr. Goodall, Provost of Eton College, on the Devonshire coast; and I was lately furnished with specimens by Robert Ball, Esq., of Dublin Castle, who obtained them at Youghal, Ireland.

This may be distinguished from the young of *C. edule*, by being invariably much thinner, and more inflated; smoother, and its colour of a gamboge-yellow, and zoned. Its habitat is at the mouths of rivers, where the water is brackish; and it never reaches an inch in diameter.

6. *CARDIUM FASCIATUM*, pl. XXXV, f. 9 and 11.

*Cardium fasciatum*, First Ed., pl. 22, f. 9 and 11; Montagu, Sup., p. 30, pl. 27, f. 6; Turton, Biv., p. 189; Fleming, p. 422.

Shell suborbicular, subtruncated on the posterior side, thin, and subpellucid; with about twenty-seven flat, smooth ribs, which are slightly tuberculated at the rounded side; colour reddish-white, with three or four bands of reddish chestnut-brown, penetrating to the inside of the shell, which is of a fine bluish-white; the ribs are also visible. Diameter seldom exceeding three-eighths of an inch; breadth somewhat more.

This shell will readily be distinguished from the young of *C. edule*, by its lateral subtruncation; the young *edule* being invariably circular in this condition.

Found on the coasts of Cornwall, Devonshire, and Forfarshire.

7. *CARDIUM EXIGUUM*, pl. XXXV, f. 10.

*Cardium exiguum*, First Ed., pl. 22, f. 10; Montagu, p. 82; Turton, Biv., p. 186; Fleming, p. 422; *Cardium pygmaeum*, Donovan, I, pl. 32, f. 3.

Shell very convex, subtriangular, and slightly cordiform; colour cream-white, or rosy; with from twenty to twenty-two strongly tuberculated ribs; the intervening furrows deep and transversely striated; anterior side considerably sloped, and nearly parallel with the umbones; inside smooth, white, and sometimes reddish at the flattened side; margin deeply denticulated. Diameter about half an inch.

The subtriangular form of this shell is one of its most striking characteristics.

Inhabits the coasts of Falmouth, Salcomb, and Torbay, where Dr. Turton says he has found them burrowing in the hardest stone; also in the Frith of Forth; Portmarnock, and the Western coasts of Ireland.

8. *CARDIUM LÆVIGATUM*, pl. XXXV, f. 12, 13, 14, 15.

*Cardium lævigatum*, First Ed., pl. 22, f. 12, 13, 14, 15; Montagu, p. 80; Donovan, II, pl. 54; Turton, Biv., p. 190; Fleming, p. 422; Forbes, p. 46.

Shell elongated, subcompressed, suboval; with numerous, smooth, flat, narrow ribs, which become obsolete on both sides

of the shell, divided by very narrow, shallow furrows, and crossed by shallow, irregular, indistinct, concentric wrinkles; surface of a pale yellowish flesh-colour, frequently mottled with chestnut, covered by a yellowish-brown, or fawn-coloured epidermis, frequently decorticated towards the umbones; inside smooth, glossy, white, with the margin pretty deeply denticulated, with indications of the ribs towards the base of the valves. Ordinary length from two to two and a half inches; breadth about from one and three-quarters to two inches.

In Orkney it attains the length of three inches. The specimen from which f. 12 was drawn is from that locality, and is in the cabinet of William Nicol, Esq., of Edinburgh.

In the earlier stages, this shell is of a rich chestnut, very glossy, and with beautiful clouds and spots of rose-colour, and the inside of a rosy hue, as in f. 15.

9. *CARDIUM OBLONGUM*, pl. XXXV, f. 16, 17.

*Cardium oblongum*, First Ed., pl. 22, f. 16, 17; Brown, Ency. Brit., 6th Ed., VI, p. 409, pl. 152, f. 9; *Cardium sulcatum*, Lamarck, VI, pt. 1st, p. 10; Ency. Meth., pl. 298, f. 5; Wood, pl. 54, f. 3.

Shell elongated, oval, oblique, considerably inflated; beaks small; with numerous, flat, narrow ribs, crossed by indistinct lines of growth; colour pale flesh, or reddish-buff, covered by an olive or yellowish-brown epidermis; inside glossy, white, flesh-coloured, or pale lilac, crenulated at the margins, with the ribs extending nearly half way from the base. Usual length about an inch and a half; breadth nearly two inches.

This shell will be easily distinguished from the *C. lævigatum*, by its more lengthened form; being more oblique, considerably more inflated, and in the ribs more numerous.

Inhabits the coast of Bray, Ireland; and at St. Andrew's, in Scotland, where it was obtained by Dr. Coldstream, of Leith.

## FAMILY IV.—CONCHACEA.

With at least three primary teeth in one valve, and the same number for the most part in the other; in a few instances less.

## GENUS 9.—PULLASTRA.—Sowerby.

Shell equivalve, transverse, inequilateral, the anterior side being the shorter; three diverging cardinal teeth in both valves, situate near to each other, and generally with a notched or cleft termination; and in a few species the central tooth is deeply so; two lateral, somewhat rounded, muscular impressions in each valve; pallial impression with a large sinus; ligament external, and partly concealed by the dorsal margins of the valves.

1. *PULLASTRA DECUSSATA*, pl. XXXVII, f. 5, 6.

*Venus decussata*, First Ed., pl. 19, f. 6, 7; Montagu, p. 124; Donovan, II, pl. 67; Turton, Biv., p. 158; Maton and Rackett, Linn. Tr., VIII, p. 88, pl. 2, f. 6; *Venerupis decussata*, Fleming, p. 451.

Shell suboval, transversely elongated, subrhomboidal; anterior side slightly truncated; whole surface with strong, longitudinal, and transverse striæ, producing a beautifully decussated appearance, which is stronger at the anterior side; umbones blunt, with a lanceolate, cordiform lunule under them; colour of a pale or dark buff, with beautiful, irregular markings of deep



purple or reddish-brown, having the appearance of Chinese characters; inside smooth, glossy, white, frequently tinged with saffron-colour or purple; margins smooth; two of the cardinal teeth cleft; sometimes the colour is of a uniform golden-yellow. Length varying from an inch and a half to two inches; breadth from two inches and a quarter to two inches and five-eighths; and when it attains the latter size, the margins of the valves are much thickened.

Found on many of the British and Irish coasts; but more local than the following.

2. *PULLASTRA VULGARIS*, pl. XXXVII, f. 7.

*Venus pullastra*, First Ed., pl. 19, f. 7; Montagu, p. 125; Turton, Biv., p. 159; Fleming, p. 451; Forbes, p. 53; Lamarck, V, p. 598; Maton and Rackett, Linn. Tr., VIII, p. 88, pl. 2, f. 7.

Shell transversely subovate; anterior side subtruncated; with fine, longitudinal, and transverse striæ, giving a fine reticulated appearance to the surface, which is of a pale yellow, buff, or white, with numerous, brown, zigzag, irregular markings; inside smooth, white, or tinged with pale flesh-colour or purple, particularly towards the subtruncated side; margins smooth.

This shell bears a strong resemblance to *P. decussata*, from which, however, it is distinguished by being smoother, the decussated striæ finer, and in the general form being less square. Both the longitudinal and transverse striæ are much coarser in *P. decussata* on the posterior side, producing a granulated appearance.

Common on most of the British and Irish coasts.

3. *PULLASTRA PERFORANS*, pl. XXXVII, f. 10.

*Venus perforans*, First Ed., pl. 19, f. 10; Montagu, p. 127, pl. 3, f. 6; Maton and Rackett, Linn. Tr., VIII, p. 89; Brown, Wernerian Mem., II, p. 511; *Venerupus perforans*, Lamarck, V, p. 506; Turton, Biv., p. 29, pl. 2, f. 15, 16, 17, 18; *Venus pullastra, young*, Forbes, p. 53.

Shell subrhomboidal; with very fine, longitudinal, and strong transverse striæ, which have much the aspect of wrinkles; umbones placed near one end, and turned a little obliquely; striæ of anterior side rough; colour of a dull, dirty yellowish-brown; inside smooth, white.

This species will easily be distinguished from the young of *P. decussata*, by its more slender and recurved teeth. It is subject to much variation in form.

Found burrowing in rocks at Teignmouth, Torbay, and off Plymouth; and in stones at Howth and Portmarnock, Ireland.

4. *PULLASTRA IRUS*, pl. XXXVI, f. 9.

*Venus Irus*, First Ed., pl. 20, f. 9; *Capsa Irus*, Leach, MSS., p. 8; *Donax Irus*, Montagu, p. 108 and 573; Donovan, I, pl. 29, f. 2; Maton and Rackett, p. 77; *Venerupis Irus*, Lamarck, V, p. 507; Fleming, p. 451; *Petricola Irus*, Turton, Biv., p. 26, pl. 2, f. 14.

Shell transversely suboval, opaque, dull white, or pale drab, and sometimes dull purple; provided with concentric, membranaceous, elevated, undulated ridges, reflected upwards, frequently interrupted, with their interstices finely striated longitudinally; umbo small, placed near to one side, the beak much turned inwards; inside white, or pale flesh-colour, generally with a dark purple or lilac spot near the hinge, and placed towards the longer side of the valves; teeth small, cleft, one excepted.

This species is extremely liable to vary in its external contour.

Found burrowing in hard Limestone rocks on the Devonshire coast, and is pretty plentiful in the rocks at Torbay; and found at Youghal, Ireland, by Robt. Ball, Esq., Dublin Castle.

5. *PULLASTRA VIRGINEA*, pl. XXXVI, f. 6, and pl. XXXVII, f. 8, 9.

*Venus virginea*, First Ed., pl. 19, f. 8, 9, and pl. 20, f. 6; Montagu, p. 128; Maton and Rackett, Linn. Tr., VIII, p. 89, pl. 2, f. 8; Turton, Biv., p. 156, pl. 8, f. 8; Forbes, p. 53.

Shell transversely suboval, strong, smooth, shining; with wide-set, transverse striæ, here and there interrupted by a larger and deeper one; colour various, of a pale chestnut, flesh-colour, or reddish-brown, ornamented with rays, clouds, and spots of various forms and hues, of umber-brown, purple, or rust-colour; a lanceolate, cordiform lunule under the umbones; inside white, frequently tinged with rose-colour, blue, or purple; margins quite smooth.

Both sides of this shell are more acuminate than either the *P. vulgaris* or *decussata*.

This beautiful shell inhabits most of the coasts around Great Britain and Ireland, and is liable to some variety in shape.

6. *PULLASTRA AUREA*, pl. XXXVI, f. 5, 7, 8.

*Venus aurea*, First Ed., pl. 20, f. 5, 7, 8; Lamarck, V, p. 600; Montagu, p. 129; Turton, Biv., p. 154; Maton and Rackett, p. 90, pl. 2, f. 9; Brown, Wernerian Mem., II, p. 511; Fleming, p. 449.

Shell transversely subovate, subcordiform, rather inflated, moderately strong, rounded; with fine, transverse striæ, and nearly obsolete, longitudinal striæ, which are not visible without the aid of a lens; umbones nearly central, small, and inflated, beneath which is a short, lanceolate, cordiform lunule; colour various, sometimes cream-white, pale or golden-yellow, or brownish-yellow, marked with purple, bluish-black, or reddish-brown zigzag lines; inside white, rich golden-yellow, or purple; hinge with three cardinal teeth in each valve, the middle one cleft. Length generally an inch; breadth an inch and three-eighths: but sometimes exceeds this size.

This species is liable to some variety in form, as will be noticed from the figures in the plate.

Found plentifully on the Devonshire, Cornwall, and Dorsetshire coasts; Dublin Bay, Portmarnock, and Carrickfergus, Ireland.

GENUS 10.—*VENUS*.—Linnaeus.

Shell smooth, equivalve, inequilateral, transverse, subglobose, or suboval; external surface sometimes rugose; margins close; three divergent, cardinal teeth in each valve, all approximate; umbones prominent for the most part, with a cordiform depression immediately under them; two lateral, remote, somewhat orbicular muscular impressions, united by a pallial impression, which is generally provided with a short, triangular sinus behind; ligament external, although sometimes almost hidden by the extension of the outer edge of the shell.

1. *VENUS GALLINA*, pl. XXXVI, f. 11.

*Venus Gallina*, First Ed., pl. 20, f. 11; Fleming, p. 448; Turton, Biv., p. 149, pl. 9, f. 2; Forbes, p. 52; *Venus striatula*, Montagu, p. 113; *Ortygia Gallina*, Leach, MSS., p. 8.

Shell strong, subtriangular, subcordiform, and moderately convex; umbones much turned to the posterior side, acute, and approximate, beneath them a large, oblong, deeply impressed, longitudinally striated lunule; whole surface covered with numerous, prominent, rounded, transverse, narrow ribs, which are reflected at their superior edges, with several inequidistant, remote lines of growth, almost all of which are provided with very fine, intermediate, concentric striæ, which can only be distinctly seen by the aid of a lens; cartilage or posterior side with a long, wide, hollow space, which is beset with numerous, fine, sharp, obliquely longitudinal striæ; external surface cream-white, frequently with several longitudinal rays of chestnut-colour, differing in degree of intensity in various individuals; most commonly, the central one very broad, and often mottled or streaked with zigzag markings; in some specimens, however, it is devoid of markings of any kind; inside white; margin finely crenulated. Size varying from three-quarters of an inch to an inch and a quarter.

This species is met with on almost all the coasts of Britain and Ireland.

2. VENUS RUGOSA, pl. XXXVI, f. 14.

*Venus rugosa*, First Ed., pl. 20, f. 14; Pennant, IV, p. 95, pl. 56, f. 50; *Ortygia rugosa*, Leach, MSS., p. 8; *Venus Gallina*, var., Montagu, Syn., p. 113; Donovan, II, pl. 68, left hand figure; *Venus pallida*, Turton, pl. 10, f. 5.

Shell strong, subtriangular, and subcordiform; umbones rather prominent, with an elongated lunule under them, and a hollow elongated space on the cartilage hinge-line, with fine, obliquely longitudinal striæ; whole surface of a uniform reddish-brown, rarely cream-white, covered by sharp, elevated, interrupted, lamelliform ribs, which make the shell feel rough to the touch; the intervening spaces covered with nearly obsolete, longitudinal striæ; inside white; margin rather blunt, and finely crenulated interiorly. Seldom exceeding an inch in length.

This shell bears a strong affinity to *V. Gallina*, but differs in the form of the ribs, in being provided with longitudinal striæ, and in the valves being considerably more inflated, in proportion to their size.

Found in the Firths of Forth and Clyde, and Dawlish.

3. VENUS SULCATA, pl. XXXVI, f. 12.

*Ortygia sulcata*, First Ed., pl. 20, f. 12; *Ortygia Pri-deauxiana*, Leach, MSS., p. 8; *Venus Gallina*, Turton, Biv., pl. 9, f. 2.

Shell subtriangular, subcompressed, the dorsal side rather pointed, moderately strong; umbones produced, much turned to one side, with an oblong, cordiform depression under them; of a pale cream-white, with frequently from two to four rays of a deep chestnut-brown, interrupted by the ribs, and the intervening spaces often mottled all over with the same colour; frequently destitute of radiations or markings; whole surface covered with many transverse, nearly equidistant, somewhat remote, elevated ribs, and the intervening spaces smooth; inside white; margin blunt, and finely crenulated. Length seldom more than three-quarters of an inch.

Found on the Devonshire coast; and also in Lough Strangford, Ireland.

Distinguished from the two former species, by its remote ribs and more triangular form, which it assumes in its earliest stages of growth; and it is much less ventricose than either.

4. VENUS COSTATA, pl. XXXVI, f. 13.

*Ortygia costata*, First Ed., pl. 20, f. 13.

Shell suborbicular, subcompressed; umbones somewhat obtuse, and subcentral; whole surface of a pale reddish-brown, and covered by remote, rather elevated, transverse, white ribs; inside white; margin crenulated.

Differs from any of the preceding species, in its more orbicular form, and in the character of the ribs.

Found by me at Seaton, Northumberland.

5. VENUS LAMINOSA, pl. XXXVII, f. 14, 15.

*Ortygia subcordata*, First Ed., pl. 19, f. 14, 15; Montagu, Sup., p. 38; *Venus lamiosa*, Laskey, Wernerian Mem., I, p. 384, pl. 8, f. 16, 16.

"Shell ovate, with numerous concentric laminal ridges, very little reflected, and not quite regular nor equidistant, but so thin as to be almost membranaceous; between the ridges, about the umbonal region, where a natural decortication has taken place, it is finely striated in the longitudinal direction, which shews that younger specimens are more generally furnished with such striæ, but in the only large specimen we have had an opportunity of examining, scarcely any such markings were observed but where the old shell had been superficially separated; umbo pointed, much reclined to one side, beneath which is a broad cordiform depression; but neither this, nor the cartilage slope differs in colour from the rest of the shell, which is wholly of a dirty white; inside white; hinge furnished with four teeth in each valve, but the outer one above the cordiform depression in one valve is obsolete, or formed only by a cavity for the reception of the corresponding tooth in the opposite valve; margin finely crenulated. Length somewhat more than an inch; breadth about an inch and a quarter."—*Montagu*.

Said to have been dredged off the Isle of May, Frith of Forth, by Captain Laskey.

6. VENUS VERRUCOSA, pl. XXXVI, f. 16.\*

*Clausia verrucosa*, First Ed., pl. 20, f. 16; *Venus verrucosa*, Poli, II, p. XVIII, pl. 21, f. 18, 19; Donovan, II, pl. 46; Montagu, p. 112; Fleming, p. 446; Turton, Biv., p. 140; *Venus Eryciua*, Pennant, IV, p. 94, pl. 54, f. 48.

Shell suborbicular, cordiform, strong, thick, convex, subtruncated at the lower angle of the dorsal side; umbones much inflexed anteriorly, sharp-pointed, and approximate, beneath them a large, elongated, cordiform, deeply defined lunule, finely striated longitudinally, with the seam twisted; whole surface covered with strong, elevated, transverse, varicose, concentrically striated ribs; the warts being larger, and more elevated on the posterior side; all the intervening furrows with broad, wide-set, longitudinal striæ, giving the shell a very rugose aspect; cartilage slope of the left valve inflected; a deep, elongated, obliquely striated space extends from the umbones on the cartilage slope, to the subtruncature of the valves; colour of a dirty white, or dull rusty-brown; inside smooth, white, with a flat, thickened, crenated margin.

In the young condition, the ridges are more perfect than in the adult, with the interstices finely crenulated.

Found on the coasts of Cornwall, Devon, Dorset, Kent, and Northumberland; as also Dublin Bay, Portmarnock, Balbriggan, and other localities, Ireland.

## 7. VENUS CASINA, pl. XXXVI, f. 15.\*

*Clausina Casina*, First Ed., pl. 20, f. 15;\* *Venus Casina*, Linné, p. 1130; Pennant, pl. 54, f. 48 A; Maton and Rackett, p. 79, pl. 2, f. 1; Turton, Biv., p. 141, pl. 9, f. 1; Montagu, Sup., p. 47; Fleming, p. 446; Forbes, p. 52; *Venus lactea*, Donovan, pl. 149.

Shell suborbicular, very thick, heavy, and rather inflated; provided with numerous, transverse, much elevated, laminar, concentric ridges, subcrenulated on the posterior side; the intervening furrows with nearly obsolete, transverse striæ; umbones not prominent, acute, and turned to the anterior side, beneath which is a cordiform, short, deeply defined lunule, covered with longitudinal, fine striæ; colour yellowish-white, or pale rusty-brown; inside dull white; margin very broad, finely crenated, greatly thickened on the edge, and covered with a dark blackish-brown coloured, laminated epidermis.

Found in the British Channel, off the Isle of Man; many parts on the coasts of Ireland; and at Caithness, Scotland.

## 8. VENUS REFLEXA, pl. XXXVII, f. 12, 13.

*Clausina reflexa*, First Ed., pl. 19, f. 12, 13; *Venus reflexa*, Laskey, Wernerian Mem., I, p. 384, pl. 8, f. 1; Montagu, Sup., p. 40 and 168; Turton, Biv., p. 142, pl. 10, f. 1, 2; Fleming, p. 446.

Shell suborbicular, rather strong, subcompressed; umbones small, considerably inflected; beneath them an oblong, cordiform lunule, elevated in the centre, and of a reddish-brown colour; posterior or cartilage side broad; whole surface covered with numerous, inequidistant, transverse, thin, reflected, laminal ridges, which are covered with extremely fine, decussated striæ; on the anterior side they are very sharp, more elevated and undulated, and turn in a contrary direction to other parts, sometimes with a small intervening one, irregularly disposed; the furrows are beset with numerous, nearly obsolete, longitudinal striæ, which can only be seen by the aid of a lens; colour pale yellowish-brown or cream-white, with two or three interrupted, longitudinal, reddish-brown radii, consisting of sagittate spots, which point towards the umbones; inside white; hinge with three strong teeth in both valves, the middle one slightly bifid; a small tubercle situate on the posterior side of the teeth, under the areola, in the right valve, with an indentation in the opposite one for its reception; margin finely crenated.

Found in the Frith of Forth; south coast of Devon; and Bantry Bay, Ireland.

## 9. VENUS FASCIATA, pl. XXXVI, f. 10.

*Clausina fasciata*, First Ed., pl. 20, f. 10; *Venus fasciata*, Donovan, V, pl. 170; Pennant, IV, p. 203; Turton, Biv., p. 146, pl. 8, f. 9; Fleming, p. 447; Forbes, p. 52; Maton and Rackett, p. 80; *Venus paphia*, Montagu, p. 110.

Shell subtriangular, strong, subcompressed; umbones prominent, nearly central, sharp-pointed, contiguous, and much turned to the anterior side, with a considerably elongated, shallow, ovate lunule beneath them, and extremely fine, longitudinally oblique striæ; anterior side acutely hollowed, the length of the lunule, at the base of which the valves are somewhat peaked; cartilage or posterior side nearly flat, with a lanceolate depression; surface plain, white, yellow, or orange, but most commonly with several radiations of reddish-brown, pale lilac, or rusty-brown, which are sometimes interrupted, and beautifully mottled in some specimens; with upwards of a dozen

broad, flat, transverse, reflected ribs, unequal both in number and breadth, being narrowed and more acute at the posterior side, sometimes regular, and nearly equidistant, at others, arranged in threes, or pairs, and in some instances an intervening, narrow, sharp rib between the sets; inside smooth, glossy, white, pale flesh-colour, or lilac, sometimes with a brown mark at one end; margins much thickened, and finely crenated. Length a little more than seven-eighths, but more commonly only six-eighths of an inch.

Found on almost all the British and Irish coasts, particularly those with a gravelly or clayey bottom.

## 10. VENUS OVATA, pl. XXXVII, f. 11.

*Timoclea ovata*, First Ed., pl. 19, f. 11; *Timoclea Pennantii*, Leach, MSS., p. 9; *Venus ovata*, Montagu, p. 120; Pennant, IV, p. 97, pl. 56, f. 56; Maton and Rackett, p. 85, pl. 2, f. 4; *Venus Pennantii*, Forbes, p. 52; *Cytherea ovata*, Fleming, p. 445.

Shell subovate, subcompressed, oblique, nearly equilateral; pale brown or yellowish, frequently mottled with rusty-brown; with strong, longitudinal, divergent ribs, crossed by fine, transverse striæ, which produce tubercular elevations on the ribs, and give a beautifully cancellated appearance to the surface; umbones almost central, slightly inflected, with a subcordiform lunule under them, which is somewhat elevated in the centre; inside glossy, white, sometimes of a pale flesh-colour, being frequently pale purple in the centre of the valves; margins slightly crenated. Length varying from half an inch to three-quarters.

Found on most of the British and Irish coasts. We met with a variety of this species in the estuary of the Clyde, in which the longitudinal ribs were set in pairs.

## GENUS 11.—CYTHEREA.—Lamarck.

Shell equivalve, generally more or less equilateral or obtusely trigonal, and transverse or ovate; smooth, or variously striated; with three or more short, divergent, cardinal teeth; and one anterior, approximate, lateral tooth in both valves, situate near the primary teeth; two remote, lateral, muscular impressions, united by a pallial impression, which is interrupted by a broad, transverse sinus; ligament external.

## 1. CYTHEREA CHIONE, pl. XXXVII, f. 2.

*Cytherea Chione*, First Ed., pl. 19, f. 2; Lamarck, V, p. 566; Fleming, p. 444; Turton, Biv., p. 160, pl. 8, f. 11; *Venus Chione*, Montagu, p. 115; Donovan, I, pl. 17; Maton and Rackett, p. 84; *Chione coccinea*, Leach, MSS., p. 8.

Shell strong, obliquely ovate, subcompressed; covered with a thick, extremely smooth, glossy, chestnut-coloured epidermis, with a few concentric wrinkles; more or less radiated with deeper coloured chestnut; umbones obtuse, placed considerably to one side, beneath them a strong, large, cordiform lunule; inside of a glossy, bluish-white; margins thick, rounded, with a hollow betwixt them when closed; pallial impressions with a very broad, transverse sinus, acuminate at the point. Length three inches; breadth three and three-quarters.

This very beautiful shell inhabits the coasts of Dorsetshire and Cornwall. Young shells are frequently of a beautiful, deep rosy flesh-colour.

## 2. CYTHEREA MINIMA, pl. XXXVII, f. 3.

*Cytherea minima*, First Ed., pl. 19, f. 3; *Cyprina minima*, Turton, Biv., p. 137; Fleming, p. 444; *Venus minima*, Montagu, p. 121, pl. 3, f. 3; Maton and Rackett, p. 81.

Shell strong, thick, suborbicular, a little compressed; umbones prominent, acute at the points, and a little turned to one side; outer surface with broad, concentric striæ; of a delicate flesh-colour, and very glossy, with two white, divergent, pretty broad lines, which emanate from the umbones, and reach half way down the disks, like the letter V; at the extremity of each line is a red streak, diverging outwards to the margin; in some specimens, however, this is wanting; but all of them have spots near the margin; inside glossy, white; margin plain. Length a quarter of an inch; breadth somewhat more.

Inhabits the harbour of Falmouth.

## 3. CYTHEREA MINUTA, pl. XXXVII, f. 4.

*Cytherea minuta*, First Ed., pl. 19, f. 4.

Shell nearly orbicular, thick, glossy; of a deep fawn-colour, and wide-set, concentric striæ; with two white lines, emanating from the umbones, and diverging to the base of the valves, in the form of the letter V; inside glossy, and of a pale pink; margins smooth. Diameter three-eighths of an inch.

I found a single specimen of this shell on the beach near Dunbar, with the animal in it, but in a very decayed condition.

This shell differs from the preceding species, in being nearly orbicular, and in the triangular lines reaching to the base.

## GENUS 12.—ARTEMIS.—Poli.

Shell nearly orbicular and lenticular, externally and concentrically grooved; beaks much turned to one side, beneath them a short, strongly marked, cordiform lunule; three cardinal teeth in each valve, two of which are contiguous, and the other divergent and broad in the right valve, cleft in the centre, to receive that of the opposite valve, which is slender, with a small, lateral, closely approximated tooth; pallial impression with a very large, deeply defined, wedge-shaped, obliquely ascending, nearly straight-sided sinus, reaching, in most species, two-thirds across the valves; cartilage subexternal.

## 1. ARTEMIS EXOLETA, pl. XXXVI, f. 1, 3, 19, 20.

*Exoleta orbicularis*, First Ed., pl. 20, f. 1, 3, 19, 20; *Artemis exoleta*, Poli, II, p. L, pl. 21, f. 9, 10, 11; Forbes, p. 51; *Venus exoleta*, Montagu, p. 116; Donovan, II, pl. 42; Maton and Rackett, p. 87, pl. 3, f. 1; Turton, Biv., p. 162, pl. 8, f. 7; *Cytherea exoleta*, Lamarck, V, p. 572.

Shell orbicular, lentiform, strong, moderately convex; with numerous, close-set, filiform, regular, concentric striæ, and many well defined, hollow lines of growth; anterior side provided with a nearly obsolete, longitudinal furrow; striæ on the disk, and as far as the umbones, smooth and slightly depressed, but thin, elevated, and sharp on the sides; umbones small, approximating, slightly produced, and much turned to one side, beneath them is situated a considerably sunk, strongly defined, elongated, cordiform, closely and longitudinally striated lunule; external surface of a cream-white, yellowish-brown, or pale fawn-colour, frequently with two or three very broad rays of

rufous-brown, differing in degree of intensity in various specimens, sometimes the rays consist of an interrupted series of triangular spots, and in some instances the surface is nearly covered by zigzag lilac markings; inside smooth, white, but not glossy, excepting the muscular and pallial impressions; margins plain. Ordinary diameter of the shell an inch and three-quarters; but in the Irish Channel it is not unfrequently met with measuring two inches and a half.

This shell is subject to some variation in depth, and when full grown the line of junction of the valves is undulated, exhibiting a considerable twist in the seam.

A variety of this shell was found in the Frith of Forth, by my friend James Gerard, Esq., of Edinburgh, with the striæ wide-set, elevated, and very sharp.

## 2. ARTEMIS LINCTA, pl. XXXVI, f. 2 and 4.

*Exoleta lincta*, First Ed., pl. 20, f. 2 and 4; Forbes, p. 51; *Venus lincta*, Pulteney, Cat. Dorset, p. 34; *Venus exoleta*, var., Maton and Rackett, p. 87, pl. 3, f. 2; *Cytherea lincta*, Lamarck, V, p. 573; *Cytherea sinuata*, Turton, Biv., p. 169, but not the figure.

Shell lentiform, nearly orbicular, slightly elongated, and moderately thick; with numerous, very fine, filiform, close-set, concentric striæ, smooth, flattened, and wide on the disk, extending to the umbones in the centre of the valves, elevated, sharp, and sublamellar on the sides, and numerous, hollow, distinctly defined lines of growth, with a longitudinal, slightly hollowed furrow on the posterior sides; umbones a little produced, approximate, much turned to one side, beneath which is a deeply defined, elongated, cordiform lunule, with exceedingly fine, obliquely longitudinal striæ; hinge line of the anterior side with a long, flattened, lanceolate depression, and very fine, longitudinally oblique striæ; external surface of a uniform pale yellowish-brown, or fawn-colour, sometimes of a livid hue; inside white, but not smooth, except the muscular and pallial impressions, together with the entire of the broad space beneath them; margins plain. Seldom exceeding an inch and a half in length.

This shell is distinguished from the *A. exoleta*, by its more elongated form, and more taper shape towards the umbonal region; by the much finer striæ, being nearly double in number, and its uniform colour, being always devoid of radiations or markings of any kind, and in the hinge line over the ligament being flattened; whereas the *A. exoleta* scarcely exhibits any appearance of that character, the twist of the seam is also much less in degree. It is liable to considerable variation in length, and also in the depth of the valves.

It is common on most of the British and Irish coasts.

Turton has properly described the species, but most erroneously given a representation of its congener, *A. exoleta*.

## GENUS 13.—CYPRINA.—Lamarck.

Shell ventricose, equivalve, inequilateral, obliquely heart-shaped; umbones obliquely curved anteriorly; three cardinal teeth in each valve, approximated at their bases, and divergent above; with a posterior, lateral tooth, remote from the primary teeth, elevated in the right valve, and receiving between it and the margin, the long flat tooth of the opposite valve; external surface covered by a thick, horny epidermis; each valve with



two lateral, remote, muscular impressions; pallial impression entire; ligament external, inserted into a deep marginal, posterior, dorsal sinus.

1. *CYPRINA VULGARIS*, pl. XXXVII, f. 1, and pl. XXXVIII, f. 11.

*Cyprina Islandica*, First Ed., pl. 18, f. 1, and pl. 19, f. 11; Lamarck, V, p. 557; Fleming, p. 443; Forbes, p. 47; *Venus Islandica*, Donovan, III, pl. 77; Montagu, p. 114; Turton, Biv., p. 135; *Venus mercinaria*, Pennant, IV, p. 94, pl. 53, f. 47.

Shell strong, thick, convex, suborbicular; umbones large, pointed, approximate, placed near the anterior side, and much inflected, destitute of a lunule beneath them; outer surface with numerous, rather close-set, concentric, somewhat irregular striæ, and covered by a strong, horny, blackish-brown, glossy epidermis, which assumes a wrinkled, sublamellated character towards the base of the valves; inside smooth, white, but not glossy; pallial impression destitute of a sinus; margin plain, and acute.

It has been found upon comparison, that this shell is not identical with *C. Islandica*.

This species is not uncommon in deep water, on most of the British and Irish coasts. The ordinary size of the shell is that on pl. XXXVII, f. 1; and the gigantic specimen from which I took f. 11, pl. XXXVIII, was dredged in the Irish Channel, and is in the cabinet of William Nicol, Esq., of Edinburgh.

In the young condition, this shell is covered with a shining, pale yellowish chestnut-coloured epidermis.

#### GENUS 14.—*LASÆA*.—Leach.

Shell equivalve, inequilateral, somewhat inflated; hinge not quite central; with approximate, small cardinal, and a remote, lateral, conspicuous tooth in one valve, and a concave, remote, strong, lateral tooth in the other; margin plain; ligament internal.

1. *LASÆA RUBRA*, pl. XXXVI, f. 17, 18.

*Lasæa rubra*, First Ed., pl. 20, f. 17, 18; Leach, MSS., p. 7; Brown, Conch. Text Book, p. 128, pl. 16, f. 16; *Cardium rubrum*, Montagu, p. 83, pl. 27, f. 4; Maton and Rackett, p. 66; *Kellia rubra*, Turton, Biv., p. 57; Fleming, p. 430; Forbes, p. 49.

Shell convex, inequilateral, somewhat broader than long, smooth, glossy, pellucid, of a purple-red colour; umbones produced, very slightly inflected; hinge with nearly obsolete, cardinal teeth, the lateral ones distinct; inside glossy, red; margin plain. Diameter not an eighth of an inch.

Inhabits the crevices of rocks on most of the British and Irish coasts.

#### SUB-DIVISION.—FLUVIATILE.

Shells covered with a spurious epidermis, and the hinge provided with lateral teeth.

#### GENUS 15.—*CYCLAS*.—Lamarck.

Shell thin, equivalve, subequilateral, ventricose, transverse, or semiorbicular; closed all round; beaks mostly tumid; cardinal teeth very small, sometimes hardly perceptible; with one plicated or lobed tooth in the left valve, and two divergent in the other; lateral teeth transversely elongated, acute, compressed, or lamelliform, double in the left valve; clothed with a thin, horny epidermis; two lateral, ovate, muscular impressions; pallial impression entire, destitute of a sinus; ligament external.

1. *CYCLAS RIVICOLA*, pl. XXXIX, f. 16, 17, 18.

*Cyclas rivicola*, First Ed., pl. 17, f. 12; Lamarck, V, p. 558; *Cyclas cornea*, Pfeiffer, Land un Was. Sc., p. 121, pl. 5, f. 3, 4, 5; Turton, Brit. Biv., p. 248, pl. 11, f. 13; *Ib.*, Man., p. 12, f. 1; Fleming, Brit. An., p. 453; Alder, Mag. Zool. and Bot., II, p. 118; *Cyclas cornea*, Draparnaud, Hist. des Moll., p. 128, pl. 12, f. 1, 2, 3; *Tellina cornea*, Wood, pl. 46, f. 3; *Cardium corneum*, Montagu, p. 86.

Shell thin, pellucid, convex, ovate; covered by a horny-green epidermis, frequently marked with paler transverse zones; furnished with strong, close, regular, concentric striæ; umbones obtuse, central, and slightly turned to one side; hinge with a very small cardinal tooth in the left valve, which fits into the space between two small, but rather produced teeth in the opposite valve; both valves provided with prominent, lateral, laminated teeth on each side, those of the right valve hardly rising above the margins, but in the left valve projecting considerably beyond them; inside smooth, bluish-white, dull in the concave disk, but glossy towards the margin; an indistinct, pretty large, muscular impression near the anterior margins, and a narrower, obscure one in the posterior sides.

This is the largest species of the genus, sometimes measuring five-eighths of an inch in length, and seven-eighths in breadth.

Found plentifully in the Thames at Battersea, and also near Red House, and in the neighbourhood of Oxford; of a large size in the Trent, near Burton; and in many slow rivers in England.

2. *CYCLAS CORNEA*, pl. XXXIX, f. 19.

*Cyclas cornea*, First Ed., pl. 17, f. 15; Pfeiffer, p. 120, pl. 5, f. 1, 2; Turton, Brit. Biv., p. 248, pl. 11, f. 14; *Ib.*, Man., p. 13, f. 2; Fleming, Brit. An., p. 452; Forbes, p. 49; Thompson, Ann. and Mag. Nat. Hist., VI, p. 52; Alder, Mag. Zool. and Bot., II, p. 118; *Cyclas rivalis*, Draparnaud, Hist. des Moll., II, p. 202, No. 387; *Tellina cornea*, Gmelin's Linné, I, p. 1120, No. 72.

Shell subglobular, ventricose, thin, semitransparent; with concentric, nearly obsolete striæ; umbones obtuse; epidermis greenish horn-colour, with darker zones, and bordered with a broad, yellowish band; inside dull bluish-white. Length three and a half eighths of an inch; breadth half an inch.

A very distinct variety, considerably less than the ordinary size, with the teeth larger in proportion, and of a lemon-yellow colour, was found by Mr. Glover, in the Leven, not far from Ambleside.

Found in most water streams, and in stagnant ditches and pools, throughout Britain and Ireland; is common in Duddingston Loch, near Edinburgh, of the size above described, which is considerably more than its ordinary dimensions.

This shell is readily distinguished from the *C. rivicola*, by its more ventricose shape, in being thinner, more transparent, and seldom measuring above half the size of the former.

3. *CYCLAS LACUSTRIS*, pl. XXXIX, f. 20.

*Cyclas lacustris*, First Ed., pl. 17, f. 16; Drapernaud, Hist. des Moll., p. 130, pl. 10, f. 6, 7; Lamarck, V, p. 559, No. 3; Turton, Man., p. 14, f. 4; Pfeiffer, p. 122, pl. 5, f. 6, 7; Fleming, Brit. An., p. 453.

Shell thin, rhombic-orbicular, subequilateral, somewhat compressed; sides rather obtuse, rendering the general contour more circular than others of the genus; obsolete striate; beaks obtuse, of a grayish ash-colour.

Found in Ulliswater; a small pond on the grounds at Corby, Cumberland; and at Prestwick Car, Northumberland. It is a rare British shell.

It is much more compressed than any of the other British *Cycladæ*.

4. *CYCLAS CALYCVLATA*, pl. XXXIX, f. 21.

*Cyclas calyculata*, First Ed., pl. 17, f. 13; Drapernaud, Hist. des Moll., p. 130, pl. 10, f. 14, 15; Lamarck, V, p. 559, No. 5; Pfeiffer, p. 122, pl. 5, f. 17, 18; Turton, Man., p. 14, f. 3; Forbes, p. 50; *Cyclas lacustris*, Alder, Mag. Zool. and Bot., II, p. 118.

Shell thin, rhombic-orbicular, grayish ash-coloured, compressed, diaphanous, substriate, or nearly smooth; slightly angular on one side; umbones very prominent, and acute. About a quarter of an inch long; and its width nearly the same.

Found in the lakes of Westmoreland, and is not uncommon in several pits and ponds near Manchester, but is a very rare and local species.

GENUS 16.—*PISIDIUM*.—Pfeiffer.

Shell equivalve, transverse; sides unequal, completely closing; in the right valve one, and in the left valve two opposite, very small, primary teeth; behind and before, two thin, lamellar, side teeth; those of the latter cleft in the right valve, in order to receive the opposite ones.

The shells of this genus are distinguished from those of *Cyclas*, by being less equilateral in their form, and in the ligamentary side being shortest, which is the reverse in *Cyclas*.

1. *PISIDIUM OBLIQUUM*, pl. XXXIX, f. 22.

*Pisidium obliquum*, First Ed., pl. 17, f. 14; *Cyclas obliqua*, Lamarck, V, p. 559, No. 4; *Pisidium obliquum*, Pfeiffer, p. 124, pl. 5, f. 19, 20; *Cyclas palustris*, Drapernaud, Hist. des Moll., p. 131, pl. 10, f. 17, 18; *Cyclas amnica*, Turton, Brit. Biv., p. 250, pl. 11, f. 15; Ib., Man., p. 15, f. 5; *Cyclas amnicus*, Fleming, Brit. An., p. 453; *Tellina amnica*, Gmelin's Linné, I, p. 3242, No. 78; Müller, p. 205, No. 389; *Tellina rivalis*, Linn. Trans., IV, p. 187; Donovan, Brit. Sh., II, pl. 64, f. 2; *Cardium amnicum*, Montagu, p. 86.

Shell thin, subpellucid, of a brownish or grayish horn-colour, obliquely oval, moderately convex, and sulcated concentrically, with the furrows finely striated; beaks tumid, a little produced, and placed considerably towards the anterior side; left valve provided with a double central tooth, and two lateral teeth on each side, standing parallel one within the other, the outer of which is very small; right valve with two cardinal, approximating, oblique teeth, with one lateral tooth on each side, that on the posterior side strong, and elevated above the margin of the shell; inside bluish-white, dim in the disk, but glossy towards the margin; on each side are distinctly visible, large, smooth spaces, to which the muscles adhere. Length three-eighths of an inch; breadth half an inch: although it is but rarely met with of this size.

Found in slow running rivers and streams, and is known to inhabit the Avon, Wiltshire; in the water-courses in the meadows near Wareham, Dorsetshire; the Liffey, Ireland, near Sallins, Kildare, and in rivulets which run through the bog at that place; we have also met with it in a stream, which empties itself into the Water of Leith, a little way above Colt Bridge, near Edinburgh; and many other localities.

2. *PISIDIUM FONTINALE*, pl. XXXIX, f. 23.

*Pisidium fontinale*, Pfeiffer, Land un Was. Sn., p. 126, pl. 5, f. 15, 16; Brown, Edin. Journ. Nat. and Geo. Science, I, p. 11 and 413, pl. 1, f. 5, 6, 7; *Cyclas fontinalis*, Drapernaud, Hist. des Moll., p. 130, pl. 10, f. 11, 12; Lamarck, An. San. Vert., V, p. 559, No. 7; *Cyclas pusilla*, Turton, Conch. Dict.; Ib., Brit. Biv., p. 251, pl. 11, f. 16, 17; Ib., Man., p. 16, f. 7; *Pisidium pulchellum*, Jenyns, Monog., p. 18, pl. 21, f. 1; Thompson, Ann. and Mag. Nat. Hist., VI, p. 53; Forbes, Mal. Mon., p. 50.

Shell suboval, oblique, very convex, pellucid, and covered with extremely fine, concentric, rather obscure striæ; umbones obtuse, placed nearest the anterior side; hinge with one central and two lateral teeth in the right valve, and two oblique cardinal and one lateral tooth in the other; colour pale ash. A little more than an eighth of an inch in length; and somewhat more in breadth.

First discovered in a ditch at Duddingston Loch, near Edinburgh, by my friend James Gerard, Esq. I have since found it in the ditch at the north end of the Loch, and also in a ditch at Hunter's Bog, King's Park.

Turton, in his Manuel, says it is found "in most streams and brooks," but although I have examined numerous localities in England, Ireland, and Scotland, I have not found it so common as he alleges.

3. *PISIDIUM OBTUSALE*, pl. XXXIX, f. 24.

*Pisidium obtusale*, Alder, Mag. Zool. and Bot., II, p. 118; Pfeiffer, p. 125, pl. 5, f. 21, 22; Brown, Edin. Journ. Nat. and Geo. Science, I, p. 413; Thompson, Ann. and Mag. Nat. Hist., VI, p. 53; *Cyclas obtusalis*, Lamarck, V, p. 559, No. 6; *Pera gibba*, Leach, MSS.

Shell oblique, ventricose, heart-shaped; sides somewhat unequal; beaks prominent, and obtusely rounded; pellucid, yellowish-white, or pale horn-coloured; with extremely minute, concentric, thin striæ; the lower edges of the valves rather sharp. Length an eighth of an inch; breadth an eighth and a quarter; thickness not quite an eighth.

I found this new British species immediately under the columnar greenstone rocks, west end of Arthur's Seat, near Edinburgh, plentiful in a ditch at the Wells of Weary, which is now covered up by the railway.

4. *PISIDIUM APPENDICULATA*, pl. XXXIX, f. 25.

*Cyclas appendiculata*, Leach, MSS.; Turton, Man., p. 15, f. 6; *Pisidium Henslowianum*, Thompson, Ann. and Mag. Nat. Hist., VI, p. 54; *Tellina Henslowiana*, Sheppard, Linn. Trans., XIV, p. 150.

Shell obliquely oval, much inflated; with regular, well defined, concentric grooves; beaks very tumid, considerably produced, and somewhat tubercled. Length an eighth and a half of an inch; breadth not quite a quarter.

Found in slow running streams, but is very rare.

This shell seems nearly allied to *P. obliquum*, from which, however, it differs, in its greater convexity, and the protrusion of the beaks, at the base of which is a groove, or dark zone, giving them the appearance of tubercular appendages.

5. *PISIDIUM NITIDUM*, pl. XXXIX, f. 26.

*Pisidium nitidum*, Jenyns, Monog., p. 16, pl. 20, f. 7, 8; Thompson, Ann. and Mag. Nat. Hist., VI, p. 53.

Shell suborbicular, or slightly oval; umbones large, and blunt; external surface very glossy, of a pale horn-colour, and covered with fine, concentric striæ, which are wider-set and deeper on the umbones.

Inhabits Battersea Fields, some ditches in Cambridgeshire, and ditches near Worcester; in a pond at Wolfhill, near Belfast, and other places in that neighbourhood; Lough Gill, County Sligo, Portarlinton, and Finnoe, Ireland.

6. *PISIDIUM PUSILLUM*, pl. XXXIX, f. 27.

*Pisidium pusillum*, Jenyns, Monog., p. 14, pl. 20, f. 4 and 6; Thompson, Ann. and Mag. Nat. Hist., VI, p. 53; *Cyclas pusilla*, Turton, Brit. Biv., p. 251, pl. 11, f. 16, 17; *Ib.*, Man., p. 16, pl. 1, f. 7; Alder, Mag. Zool. and Bot., II, p. 119.

Shell nearly orbicular, slightly ovate, subcompressed; umbones prominent, and very obtuse at the points; sides somewhat flattened, and very slightly inequilateral; surface of an olivaceous-brown, with very fine, concentric striæ.

Inhabits ponds near London, and many other localities. In Ireland, according to Thompson, it is the most common of the genus, frequenting ponds and drains.

7. *PISIDIUM CINEREUM*, pl. XXXIX, f. 28.

*Pisidium cinereum*, Alder, Cat. Sup., p. 4; *Ib.*, Mag. Zool. and Bot., II, p. 119; Thompson, Ann. and Mag. Nat. Hist., VI, p. 54.

Shell compressed, subovate; umbones but slightly produced, obtuse at the points, is sometimes capped; lower margins of the valves meeting at an acute angle; surface of a grayish ash-colour, and finely striated concentrically; with a few super sulci, which form deeper transverse zones.

This shell is more ovate in its form than any of its congeners, excepting the *P. obliquum*, and will be at once recognized by being more compressed than them, and by its ashy hue.

*Variety 1.* Somewhat more ventricose, with the umbones a little more produced.

Inhabits ponds near Newcastle, and other localities in the North of England. Mr. Thompson says it is widely spread throughout Ireland, although no where common. He par-

ticularizes Holywood House, Downshire; Youngrove, near Middleton, County of Cork, by Miss M. Ball; Killreran, County of Galway, and Portarlinton, by the Rev. B. J. Clarke; and neighbourhood of Dublin, by Thomas William Warren, Esq.

SUB-DIVISION.—TENUIPEDES.

The mantle barely united before; foot small, narrow, and compressed; shell having but a moderate gape.

FAMILY I.—NYMPHACEA.

Having never more than two primary teeth in the same valve; shell often gaping slightly at the lateral extremities; ligament external; umbones generally projecting outwards.

*Section I.—Destitute of lateral teeth.*

GENUS 17.—CRASSINA.—Leach.

Shell suborbicular, transverse, equivalve, inequilateral; hinge with two strong, divergent, primary, large, central teeth in the right valve, and one small, nearly obsolete tooth, together with an indistinct, lateral one in the left valve; two ovate or oblong, remote, lateral, simple, muscular impressions in each valve, with a third very small one, situate immediately below the indistinct lateral tooth, or at the end of the posterior external depression, and in some instances mingling with the lower termination of the posterior muscular impression, which is always simple, and not sinuated.

1. *CRASSINA DANMONIENSIS*, pl. XXXVIII, f. 1.

*Crassina Danmoniensis*, First Ed., pl. 18, f. 1; Lamarck, V, p. 554; *Venus Danmonia*, Montagu, Sup., p. 45, pl. 29, f. 4; *Crassina sulcata*, Turton, Biv., p. 131, pl. 11, f. 1, 2; *Astarte Danmonice*, Fleming, p. 440; *Astarte Danmoniensis*, Forbes, p. 50.

Shell strong, thick, subcordiform, subcompressed; with many regular, obsolete striated, strong, equidistant, transverse ribs; intervening furrows rather deep, quite smooth; umbones nearly central, anteriorly reclined, and rather acute, with a deep, lanceolate lunule under them; surface covered with a dark reddish-brown, strong epidermis; inside white, but not glossy, except round the margin, which is finely crenated, and very blunt at the edge.

Found on the Devonshire, Welsh, and Northumberland coasts; also the Friths of Forth and Clyde; Lough Strangford and Portmarnock, Ireland.

2. *CRASSINA SCOTICA*, pl. XXXVIII, f. 9.

*Crassina Scotica*, First Ed., pl. 18, f. 9; Turton, Biv., p. 130, pl. 11, f. 3, 4; *Venus Scotica*, Montagu, Sup., p. 44; Matou and Rackett, p. 81, pl. 2, f. 3; Lamarck, V, p. 600; *Astarte Scotica*, Fleming, p. 440; Forbes, p. 51.

Shell thick, subcordiform, subcompressed; umbones nearly central, considerably reclined anteriorly; beneath them a lanceolate, subcordiform lunule; surface with many regular, rather elevated, somewhat parallel, transverse ribs, which are narrowed towards the posterior side; whole surface covered with a thick, yellowish-brown epidermis, but reddish-brown in others; inside smooth, white; with the margin plain.

The want of crenulations on the margin of this shell, will at once distinguish it from the *C. Danmoniensis*.

Found on the coast of Caithness, and the Frith of Forth, Scotland; and the Downshire coast, Ireland.

3. *CRASSINA ELLIPTICA*, pl. XXXVIII, f. 3.

*Crassina elliptica*, First Ed., pl. 18, f. 3.

Shell thick, nearly oval, rather compressed; umbones pointed, considerably turned towards the anterior side; beneath which is a cordiform, deep lunule; cartilage side rather straight; with many regular, transverse, nearly straight, obsoletely striate ribs; external surface of a dark yellowish-brown; inside white, smooth; margin plain, rather thickened, with a slight rim at the edge.

Found in the Friths of Forth and Clyde.

The more thickened margin, and elliptical form of this shell, will at once distinguish it from its congeners.

4. *CRASSINA OVATA*, pl. XXXVIII, f. 11, 12.

*Crassina ovata*, Brown, Edin. Journ. Nat. and Geo. Science, I, p. 12, pl. 1, f. 8; *Crassina Gairensis*, Nicol, MSS.

Shell thick, strong, subcompressed; umbones small, pointed, with a lanceolate, deep, and large lunule below them; surface of a deep burnt umber-brown, with numerous, broad, elevated, concentric, transverse ridges, which become nearly obsolete as they approach the base of the valves; inside bluish-white, with a broad and plain margin; muscular impressions large and deep.

This species has much the appearance of *C. Scotica*, but differs from it in being more ovate, much stronger, the muscular impressions being nearly double the size, and in the lunule being larger and deeper.

Inhabits the Gair Loch, in the river Clyde, where it is rather plentiful.

5. *CRASSINA SULCATA*, pl. XXXVIII, f. 10.

*Crassina sulcata*, First Ed., pl. 18, f. 10; *Venus sulcata*, Montagu, p. 131; Lamarck, V, p. 592; Maton and Rackett, p. 81, pl. 2, f. 2; Brown, Wernerian Mem., II, p. 510; *Astarte sulcata*, Fleming, p. 439.

Shell strong, thick, suborbicular, subangular, and considerably compressed; umbones very prominent, nearly central, acute, and but slightly turned to one side, with a lanceolate, shallow lunule; external surface of a yellow-chestnut, strong epidermis, and a series of very broad and flat transverse ridges, which become nearly obsolete at the sides, and towards the umbones; cartilage side somewhat flattened; basal margin well rounded; inside smooth, white, and very glossy from the pallial impression to the margin, which is very finely crenated at the edge; hinge teeth very strong. Length about seven-eighths of an inch; breadth not quite so much.

This shell is very distinct from its congeners; the transverse ridges are greatly broader, and very much depressed; the space between the pallial impression much broader and flatter, and the epidermis more clear.

Turton has completely mistaken this very distinct species, in quoting Montagu. His description and figures apply to *C. Danmoniensis*, from which the present is totally distinct.

Found in Orkney and Cornwall; and has been dredged alive at Bray, Ireland. I met with odd valves in the Frith of Forth, and on the beach at Montrose.

6. *CRASSINA COMPRESSA*, pl. XXXVIII, f. 4, 5.

*Crassina compressa*, First Ed., pl. 18, f. 4, 5; Montagu, Sup., p. 43, pl. 26, f. 1, 1, 1.

Shell strong, thick, nearly orbicular, compressed; umbones prominent, turned slightly to the anterior side, beneath which is a cordiform lunule; surface with a few irregular, remote, concentric wrinkles, which become obsolete towards the base of the valves; of a dark umber-brown colour, beneath which the shell is covered with transverse, irregular, almost obsolete striæ; inside smooth, white; margins broad, flat, and thin, and destitute of crenulations.

This species differs from any of the preceding, in being destitute of distinct ridges, and is more orbicular. The young are of a pale yellowish-brown, and are almost smooth, but when the epidermis is removed, they betray a finely striated surface. I obtained some live specimens, by dredging, off the coast of Dunbar. The only full grown specimen which I have seen, is that from which Montagu's shell was described and drawn, as well as my figure, and is in the cabinet of my late friend David Falconer, Esq., of Carlowrie.

7. *CRASSINA CORRUGATA*, pl. XL, f. 24.

*Crassina corrugata*, First Ed., pl. 16, f. 24.

Shell strong, somewhat triangular, compressed; umbones small, obtuse, and very slightly reflexed; beneath them a large, deep, lanceolate lunule; surface covered with a reddish-brown epidermis, transversely wrinkled, and with nearly obsolete, transverse, numerous, irregular striæ; inside smooth, bluish-white; margin smooth, and entire, sloping gradually towards the centre, but not deep; teeth very strong. Length an inch and a half; breadth nearly two inches.

This shell differs from the other species, in the posterior margin being somewhat produced, and in its total destitution of ribs; and is much flatter, in proportion to its size.

Discovered at Greenock, by my friend Stewart Ker, Esq.

8. *CRASSINA DEPRESSA*, pl. XXXVIII, f. 2.

*Crassina depressa*, First Ed., pl. 18, f. 2.

Shell compressed, transversely and obliquely subovate; umbones rather prominent, and slightly reflexed, with a lanceolate, deep lunule under them; colour of a dark reddish-brown, with many flattened, transverse ridges, and narrow, shallow, intervening furrows; inside white, smooth; margins plain, and rather thickened in the edge. Length nine-eighths of an inch; breadth nearly eleven-eighths.

This differs from the *C. Scotica*, in being more transversely elongated, oblique, more compressed, with the basal line more parallel, the transverse ridges more numerous, very flat, and almost obsolete.

Found in the Frith of Forth; but I have hitherto only met with dead and detached valves.

9. *CRASSINA STRIATA*, pl. XXXVIII, f. 6, 7, 8.

*Crassina striata*, First Ed., pl. 18, f. 6, 7, 8.

Shell suborbicular, very strong, and rather ventricose; umbones produced, and rather blunted at the beaks, placed nearly central, and slightly reclining; beneath them a deep, lanceolate lunule; surface with numerous, regular, fine, transverse striæ, covered with a dark olive-brown epidermis; inside white, smooth, and glossy; cartilage impressions very deep. Length three-eighths of an inch; breadth half an inch.



This species is not uncommon in the Frith of Forth, and at Color Cots, near Tynemouth, Northumberland.

In the first edition, we considered the three figures referred to as distinct species, but on comparing various specimens, we are now inclined to look upon them as mere varieties.

Fig. 7 was thought a decided species by my late friend Dr. Leach, and who named it *C. convexiuscula*, MSS., p. 8. It is considerably more convex, with the striæ finer.

Fig. 6 we called the *C. obliqua*, from its oblique form, and being stronger and more inflated than the others.

#### GENUS 18.—CAPSA.—Lamarck.

Shell transverse, equivalve, inequilateral; valves close all round; one valve with two cardinal teeth, divergent from a point close to the umbo; destitute of lateral teeth; in the opposite valve one distinct, bifid, cardinal tooth, with two distant, nearly obsolete, lateral teeth; ligament external, entirely situate on the anterior side of the umbones; two, not very deeply defined muscular impressions in each valve; pallial impression with a large sinus.

##### 1. CAPSA COMPLANATA, pl. XXXIX, f. 10.

*Donax complanata*, First Ed., pl. 17, f. 10; Montagu, p. 106, pl. 5, f. 4; Maton and Rackett, p. 75; Fleming, p. 433; Turton, Biv., p. 125, pl. 7, f. 13, 14.

Shell subtriangular, transversely elongated; umbones obtuse; smooth, and extremely glossy; of a pale or golden-yellow, or faint lilac-colour, frequently spotted and blotched with reddish-brown, or fawn; a broad, paler, generally immaculate ray emanates at the umbones, and terminates on the margin, which is frequently edged with a ferruginous shade; in some specimens faint indications of transverse striæ are observable by the aid of a lens; inside smooth, extremely glossy, usually of a purple hue, frequently shaded with golden-yellow, or orange-buff, especially near the umbones, and sometimes with transverse zones of pale bluish-purple; teeth small, especially the lateral ones; margin destitute of crenulations.

This rare species is met with at Milton Sands; on the coasts of Devon, Dorset, Torbay, and Guernsey; and has been met with on the Irish coasts, at Connamara.

##### 2. CAPSA CASTANEA, pl. XXXIX, f. 12.

*Capsa castanea*, Turton, p. 128, pl. 10, f. 13; Fleming, p. 434; *Donax castanea*, Montagu, p. 573, pl. 17, f. 2; Maton and Rackett, p. 77.

Shell strong, transversely elongated; umbones obtuse, slightly inflected towards the anterior side; surface glossy, of a chestnut-colour, with a few irregular, transverse, nearly obsolete wrinkles; an arcuated ray of darker chestnut emanates at the umbones, and terminates in the base, from whence to the posterior side the colour is paler than on the other parts of the shell; inside smooth, glossy, and of a pale chestnut, with an indication of the external ray on the margin; hinge strong, with the teeth large, in proportion to the size of the shell; margin plain. Length a quarter of an inch; breadth three-eighths.

Found at St. Austle's Bay, Cornwall, Penzance, and south coast of Devonshire.

#### Section II.—Shells with one or two lateral teeth.

#### GENUS 19.—DONAX.—Linnæus.

Shell transverse, trigonal, equivalve, inequilateral; outer surface generally covered with a thin, horny epidermis; anterior side for the most part the shorter; left valve with two more or less distinct, cardinal teeth; right valve with only one cardinal tooth, which is generally cleft at its extremity; lateral teeth variable, either two or one, very minute, and remote; two large muscular impressions in each valve, and that of the mantle with a large posterior sinus; ligament external, and short.

In some species there are two lateral teeth, one of which being placed on each side of, and near to the primary teeth; one valve is provided with a linear, posterior process, remotely situated from the other lateral teeth, and between which and the margin of the shell, there is a groove for the reception of the other valve; the anterior lateral tooth can alone be distinguished, in each valve in other species, together with the linear process; in some species there are two lateral teeth in one valve, the posterior one more remote than the anterior, while in the opposite valve there are only slight indications of them; and in some species the lateral teeth are nearly obsolete. The ligament is generally short, and in some instances very much so; the greater portion of it is situate anteriorly,\* but in most of the species a small portion of the ligament is likewise placed behind the beaks. The shells of this genus are for the most part wedge-shaped.

##### 1. DONAX TRUNCULUS, pl. XXXIX, f. 11.

*Donax trunculus*, First Ed., pl. 17, f. 11; Pennant, p. 93, pl. 55, f. 45; Donovan, I, pl. 29, f. 1; Montagu, p. 103; Turton, p. 123; Fleming, p. 433; Forbes, p. 46.

Shell somewhat compressed, transversely oblong, inequilateral, smooth, glossy; umbones small; very finely striated longitudinally; covered with a very thin epidermis, generally of a light yellowish hue, fasciated and radiated with purple, the radii emanating from the beaks, and terminating on the basal margin; sometimes quite plain; inside most frequently partaking of the colour of the exterior; teeth small, the lateral one not very distant from the cardinal ones; margins crenated.

Found on most of the coasts of Great Britain and Ireland.

##### 2. DONAX RUBRA, pl. XXXIX, f. 13.

*Donax rubra*, Montagu, Sup., p. 38; Turton, Biv., p. 127, pl. 10, f. 11; Fleming, p. 434.

Shell cuneiform, smooth, and semitransparent, considerably truncated at one end; umbones prominent, but obtuse at the points; surface of a reddish-flesh or claret-colour, but frequently only coloured near the umbones; inside glossy, and usually of the same colour as the outside; hinge with two teeth in each valve, approximating towards the centre of the umbones; margin plain. Length not an eighth of an inch.

Inhabits deep water on different parts of the coast. Dr. Turton says it is found abundantly in fine shelly sand at Tenby.

\* Contrary to Lamarck, we consider the side in which the ligament is situate to be the *anterior side*, and it can only lead to confusion to make an exception in this genus.

## GENUS 20.—MYRTEA.—Turton.

Shell subtriangular, equivalve, nearly equilateral; umbones almost central, with a deep, lanceolate lunule beneath them; hinge with a single, central, primary tooth, and a lateral tooth on each side, in the left valve, and two cardinal and two slightly defined lateral teeth in the right valve; muscular impressions reniform, and shallow; pallial impression entire; ligament external.

1. MYRTEA SPINIFERA, pl. XXXVI, f. 15, 16, and pl. XXXIX, f. 14, 15.

*Ortygia spinifera*, First Ed., pl. 20, f. 15, 16; *Venus spinifera*, Montagu, p. 577, pl. 17, f. 1; Maton and Rackett, p. 78; Fleming, p. 443; *Myrtea spinifera*, Turton, Biv., p. 133.

Shell somewhat subtriangular, subcompressed; umbones small, acute, and slightly inflected; posterior or cartilage side nearly parallel; anterior side rather concave; surface with many fine, concentric, sharp, almost equidistant, elevated, slightly reflected, laminar ridges, which on the margin of the cartilage side become confluent, in pairs, and project in the form of a series of short, obtuse spines; between these two ridges of spines there is an elongated, subulate, deep, obliquely striated cavity, for the reception of the ligament; at the termination of these ridges of spines, the shell is slightly truncated; the intercostal spaces are finely and very minutely striated transversely, which can only be seen by the aid of a lens; inside smooth, yellowish-white; margin somewhat flattened, and plain.

Found at Salcomb Bay, Devonshire; several parts on the Western coasts; and at Portmarnock, Ireland, but is a very local and rare species.

## GENUS 21.—LUCINA.—Bruguière.

Shell equivalve, inequilateral, usually orbicular, lenticular, and subdepressed; teeth variable, most commonly two minute, cardinal teeth, divergent from the umbo, frequently nearly obsolete; in one valve one lateral tooth on each side of the umbo, and two on each side in the other; the anterior lateral ones being situate near to the primary teeth, and the posterior immediately behind the ligament; two muscular impressions, remote from each other, the anterior one generally extended backwards and downwards, in the form of an elongated band; pallial impression destitute of a sinus; ligament external, elongated, and partly hidden by the inflected margins of the valves when closed, consequently the internal tendinous portion is frequently sunk into a deep, elongated cavity, situate between the teeth and hinge margin.

The Lucinæ inhabit the ocean. Fossil species are numerous, and occur in the beds of the Tertiary formation, of which they are a characteristic type.

1. LUCINA RADULA, pl. XXXIX, f. 8, 9.

*Lucina radula*, First Ed., pl. 17, f. 8, 9; Lamarck, V, p. 541; Fleming, p. 441; Forbes, p. 47; *Tellina radula*, Montagu, p. 68, pl. 2, f. 1, 2; Maton and Rackett, p. 54; *Venus borealis*, Donovan, IV, pl. 130.

Shell suborbicular, convex; umbo central, small, slightly produced, blunt, a little inflected; lunule oblong, cordiform, much

depressed; posterior side with a longitudinal flexure, emanating behind the umbones, and terminating on the side; whole exterior covered with numerous, fine, distant, elevated, concentric, narrow, laminated ribs, which are sharp on the surface, and feel rough to the touch, white, or covered with a very thin, yellowish-brown epidermis; inside dull white, except betwixt the pallial impression and the margin; sinus narrow, obliquing downwards, and nearly parallel with the margin; hinge with two oblique teeth in both valves, one of them a little cleft.

This shell is sometimes elongated in form, as in fig. 9.

Not uncommon on many of the British and Irish coasts.

2. LUCINA ROTUNDATA, pl. XL, f. 11.

*Mysia rotundata*, First Ed., pl. 16, f. 11; *Lucina rotundata*, Turton, Biv., p. 114, pl. 7, f. 3; *Tellina rotundata*, Montagu, p. 71, pl. 2, f. 3; Maton and Rackett, p. 56; Brown, Wernerian Mem., II, p. 508; *Psammodia rotundata*, Fleming, p. 438.

Shell thin, orbicular, white, and rather convex; umbones small, nearly central, obtuse, and very slightly turned to one side; surface moderately glossy, with fine, nearly obsolete, concentric striæ; inside smooth, glossy, white; two teeth in each valve, one of which is cleft, and the other slightly divergent.

Inhabits the sea at Poole, Dorsetshire; also the coasts of Devon and Wales; and has been met with on several parts of the Irish coast, particularly at Bantry Bay.

3. LUCINA LACTEA, pl. XXXIX, f. 3.

*Lucina lactea*, First Ed., pl. 17, f. 3; Lamarck, V, p. 542; Turton, Biv., p. 112, pl. 7, f. 4, 5; *Tellina lactea*, Montagu, p. 70, pl. 2, f. 4; *Loripes lacteus*, Leach, MSS., p. 9; Fleming, p. 430.

Shell thin, orbicular, equilateral, convex; umbones small, nearly central, and slightly inflected anteriorly, with a small cordiform lunule under them; surface white, with fine, concentric, irregular wrinkles, sometimes interspersed with a few antiquated ridges; inside white, moderately glossy; hinge with two small teeth in one valve, and one in the other; a deep sulcus, by the side of the teeth in both valves, emanating at the umbones, for the reception of the cartilage; margin below the pallial impression shining, slightly and obsoletely striated longitudinally.

Found at Torbay, Falmouth, Kingsbridge, and Poole.

4. LUCINA UNDATA, pl. XXXIX, f. 1, 2.

*Lucina undata*, First Ed., pl. 17, f. 1, 2; Lamarck, V, p. 543; Turton, Biv., p. 115; Forbes, p. 47; *Venus undata*, Pennant, IV, p. 95, pl. 55, f. 51; Montagu, p. 117; Fleming, p. 148; Donovan, pl. 121; Maton and Rackett, p. 86; *Mysia undata*, Leach, MSS., p. 9.

Shell nearly orbicular, thin, flexous; umbones prominent; beaks rather acute, and slightly inflected; destitute of a lunule; surface of a pale, dull fawn-colour, or white, with numerous, fine, close-set, irregular striæ, which in some instances run into uneven, irregular wrinkles; hinge strong, with three teeth in one valve, and two in the other, the posterior one cleft; inside smooth, glossy; margin plain, with an acute edge; the sinus in the pallial impression very large, reaching nearly to the middle of the valves.

Young shells are sometimes glossy externally. The variety, fig. 1, is from Belfast Lough, Ireland.

Found on most of the British and Irish coasts.

## 5. LUCINA LEUCOMA, pl. XXXIX, f. 29.

*Lucina leucoma*, Turton, Biv., p. 113, pl. 7, f. 8; *Loripes leucoma*, Fleming, p. 430.

Shell somewhat oblique, orbicular, slightly produced and angular on the anterior side, and generally a little flexous under the beaks and on the opposite side; umbones prominent, with a curvature under them; exterior surface of a chalky-white, with regular, crowded, transverse, raised striæ, and deeper wrinkles; crossed by extremely fine, close-set, longitudinal lines.

Turton, on whose authority we give this shell, says he has remarked in some specimens a small remote tubercle on each side of the hinge, resembling obscure lateral teeth.

Inhabits Torbay, the British Channel, and Guernsey.

## GENUS 22.—CRYPTODON.—Turton.

Shell transversely subglobose, equivalve, nearly equilateral, closed; umbones unequal, nearly central, beneath them a large, deep, elongated, cordiform lunule; hinge of the right valve with a single, irregularly-formed, erect, triangular tooth, which fits externally into a small cavity below the umbones in the opposite valve, and a narrow lateral cavity, for the reception of a triangular, flat, hollow, lateral tooth of the other valve, which is provided also with an ill-defined, nearly flat, primary tooth; both valves with a large, double, muscular impression on one side, and small single ones on the other side; pallial impression destitute of a sinus, and situate low in the valves; ligament internal, a small portion only being visible through the seam; an elongated, pointed lunule, hollow at the side and elevated in the centre, invests the entire length of the cartilage slope.

## 1. CRYPTODON FLEXUOSUS, pl. XXXIX, f. 4, 5.

*Lucina flexuosa*, First Ed., pl. 17, f. 4, 5, 6, 7; Fleming, p. 442; *Cryptodon flexuosus*, Turton, Biv., p. 121, pl. 7, f. 9, 10; *Tellina flexuosa*, Montagu, p. 72; Brown, Wernerian Mem., II, p. 508; *Venus sinuosa*, Donovan, II, pl. 42, f. 2; *Bequania flexuosa*, Leach, MSS., p. 9.

Shell subtriangular, subglobose, thin, pellucid, fragile, white; umbones small, slightly inflected, and unequal, that of the right valve smallest, the other resting on the cavity above the primary tooth of the opposite valve; beneath them a large cordate lunule, with an elongated lunule on the cartilage side, pointed at both ends; a sulcus emanates from the umbones in both valves, running nearly parallel with the cartilage, terminating at one side, where it forms a pretty large sinus, or flexure, at the edge; whole surface moderately glossy, remotely and rather irregularly striated concentrically; hinge with a single, erect, triangular tooth in one valve, and a flat, nearly obsolete one in the other; inside smooth, glossy, white, exhibiting slightly nacreous reflections, and some indications of longitudinal radii; margins plain, and very acute.

Figs. 6 and 7 is a variety of this shell, figured by Donovan, which differs from any specimens we have seen.

This interesting little shell is met with, although very sparingly, on most of the British and Irish coasts.

## GENUS 23.—ARCOPAGIA.—Leach.

Transverse, equivalve, inequilateral; right valve subdepressed; umbones very small, nearly straight; with two primary teeth in both valves, each of the larger ones cleft; left valve with two remote, lateral teeth, that on the anterior side large, with a sinus betwixt it and the margin, for the reception of the lateral tooth of the opposite valve; muscular impressions large; pallial impression interrupted by a broad, tongue-shaped, oblique, perpendicular, nearly central sinus, defined by a deep, irregular groove; margin very broad, and very glossy, as far as the pallial impression; ligament subexternal.

## 1. ARCOPAGIA CRASSA, pl. XL, f. 8.

*Arcopagia crassa*, First Ed., pl. 16, f. 8; Leach, MSS., p. 9; *Tellina crassa*, Pennant, IV, p. 87, pl. 48, f. 28; Montagu, p. 65; Brown, Wernerian Mem., II, p. 508; Fleming, p. 436; Forbes, p. 46; Turton, Biv., p. 109, pl. 7, f. 2; *Tellina rigida*, Donovan, III, pl. 103.

Shell strong, thick, somewhat oblique, transversely subovate, a little subtruncated on the extremity of the cartilage side, and slightly inequivalve, the left one being the larger, and considerably more convex than the other, which is much more compressed; umbones small, beaks short, and rather obtuse, placed considerably off the centre towards the cartilage side, and pointing to the opposite side; beneath them a rather narrow, deep, elongated, lanceolate lunule; colour white, cream-white, or pale sulphur-yellow, rarely skin-coloured or pale sulphur-yellow; sometimes plain, but more frequently beautifully radiated, with broad and narrow, variously disposed, rays of pale red, flesh-colour, or reddish-purple, which are always more distinctly defined towards their bases; whole surface covered with numerous, strong, pretty regular, concentric striæ, becoming wider as they approach the base, these are crossed by numerous, indistinct, shallow, longitudinal striæ, which can only be seen by the aid of a strong lens, and are most perceptible in the interstices between the transverse striæ, and interrupted at intervals by a few distinct lines of growth; a rather broad sinus extends from the umbones towards the base, on the posterior side of the right valve, with a corresponding ridge on the opposite valve; inside very glossy, bluish-white, rich golden-yellow, or in some of a beautiful rose-colour, or deep red; sometimes streaked and blotched in a very handsome manner; hinge with two cardinal teeth in each valve, one of which is cleft, and two strong, elongated, lateral teeth in both valves; a little way below the pallial sinus are, generally, a few irregularly disposed, shallow punctures; margins plain, with a slight groove on the edge of the left valve, for the reception of the edge of the other valve.

This interesting species is an inhabitant of most of the British and Irish coasts.

## 2. ARCOPAGIA OVATA, pl. XL, f. 9, 10.

*Arcopagia ovata*, First Ed., pl. 16, f. 9, 10.

Shell strong, thick, transversely ovate, suboblique, one valve convex, and somewhat larger than the other, which is compressed; umbones placed nearer one side, small, and rather blunt; of a pale straw-colour; covered with strong, concentric, rather regular striæ, which feel rough to the touch, with inequidistant lines of growth; destitute of a lateral sinus, or ridge; sides more uniformly rounded than in the foregoing species, and without the slight truncation; hinge with a large bifid, and a

small primary tooth in each valve, and also two lateral teeth in both valves; sinus slightly heart-shaped at its superior extremity; colour pale yellowish-white.

At first I was disposed to consider this the young of *A. crassa*, but its want of a sinus, more regularly ovate form, the shape of the pallial sinus, and large bifid tooth, induced me to give it a new specific name.

This shell was found at Newbigging, Northumberland, by Walter Calverly Trevelyan, Esq., and is in the splendid cabinet at Wallington, Northumberland.

#### GENUS 24.—TELLINA.—Linnæus.

Shell compressed, transverse, subequivalve, inequilateral; posterior side usually rounded; the anterior somewhat produced, or beaked and angular; anterior ventral margin with an irregular flexuosity; generally with two cardinal teeth in each valve, but only one in some instances; usually two lateral teeth in both valves, but sometimes only one, and for the most part remote from the primaries; two distant muscular impressions; pallial impression with a very large sinus; ligament external.

##### 1. TELLINA DEPRESSA, pl. XL, f. 12.

*Tellina depressa*, First Ed., pl. 16, f. 12; Maton and Rackett, p. 51; Brown, Wernerian Mem., II, p. 507; Donovan, V, pl. 163; Turton, Biv., p. 104, pl. 8, f. 6; *Tellina squalida*, Montagu, p. 56; Fleming, p. 436; *Bosemptra squalida*, Leach, MSS., p. 7.

Shell flat, thin, transversely oblong-ovate; with a sinus in one valve, running from the umbones, and terminating on the basal margin, on the cartilage or beaked side, in the left valve, with a corresponding elevation or ridge in the opposite valve; cartilage side terminating below in an acute angle or beak; the other side beautifully rounded; umbones very small, nearly central, and very slightly turned to one side; colour pale or rich orange-yellow, sometimes nearly white, and when perfectly recent, are covered with a fine, thin, brownish epidermis; whole surface finely, but not regularly, striated concentrically; hinge with two primary teeth in one valve, and three in the other, one of which is somewhat remote, laminated at the base, and acute at the point; inside yellowish-white or orange-yellow; margins plain, and sharp.

This very handsome species is found at Poole and Weymouth, Dorsetshire; Dublin Bay and Portmarnock, Ireland.

##### 2. TELLINA PUNICEA, pl. XL, f. 13.

*Tellina punicea*, First Ed., pl. 16, f. 13; Maton and Rackett, p. 50; Turton, Biv., p. 100; Fleming, p. 435; *Tellina laeta*, Montagu, p. 57; *Tellina inæquistriata*, Donovan, IV, pl. 123; *Tellina fragilis*, Pennant, IV, p. 86, pl. 47, f. 26.

Shell moderately strong, transversely oblong-ovate, much compressed, inequilateral; umbones very small, hardly elevated above the hinge line; one side subacute near the base, and the other well rounded; surface glossy, pale yellow or skin-colour; with numerous, strong, regular, rather open, concentric striæ; hinge with three teeth, the outer one on the anterior side bifid, the other exterior one broad, more remote, and placed somewhat transversely oblique, holding an intermediate character between a primary and lateral tooth; both valves with a very remote lateral tooth; margins plain, and sharp; inside pale pink or bluish-white.

Found on the Dorsetshire coast, Portland, and at Guernsey; and my late friend Sir Patrick Walker found it on the shore at Leith. We met with dead shells with the valves united, by dredging, off Holy Island. These are in the cabinet of Lady Jardine. It may, however, be considered as a very rare British shell.

##### 3. TELLINA STRIATA, pl. XL, f. 15.

*Tellina striata*, First Ed., pl. 16, f. 15; Montagu, p. 60, pl. 27, f. 2; Maton and Rackett, p. 53; Turton, Biv., p. 106; Fleming, p. 436.

Shell subtriangularly subovate, thin, subpellucid; glossy, of a rosy or white-colour, darker towards the umbones, which are a little produced, placed nearly central, and slightly inflected; surface with numerous, very fine, concentric striæ; and by the aid of a strong lens, nearly obsolete, exceedingly minute, longitudinal streaks or striæ are observable; one side narrow, somewhat beaked, and obliquely subtruncated; the other beautifully rounded; cartilage slope with a slight indentation; inside rosy, particularly towards the umbonal region, and becoming paler towards the margins; hinge with two remote, strong, laminated teeth.

Found on the beach at Portland and Weymouth. Extremely rare.

##### 4. TELLINA LINEATA, pl. XL, f. 17.

*Tellina lineata*, First Ed., pl. 16, f. 17; Turton, Conch. Dict., p. 168, pl. 4, f. 16; Ib., Biv., p. 99, pl. 7, f. 1; Fleming, p. 435.

Shell semitransparent, transversely oblong-ovate, slightly produced at one side, and rounded at the other; umbones small, not quite central, and very slightly, if at all, reflected; surface pale cream-white, with a pale red longitudinal stripe running close to the side in each valve; with numerous, fine, very close, regular, concentric striæ, which are strongest towards the sides; hinge with two cardinal teeth, one of them entire and the other cleft, and a lateral, laminar one on each side, in one valve, and a single, bifid, primary tooth in the other.

Dredged by Dr. Turton in Teignmouth Bay.

##### 5. TELLINA TENUIS, pl. XL, f. 19.

*Tellina tenuis*, First Ed., pl. 16, f. 19; Montagu, p. 59; Donovan, I, pl. 19, three lower figures; Turton, Biv., p. 107; Fleming, p. 436; Forbes, p. 46; Maton and Rackett, p. 52; Leach, MSS., p. 7; *Tellina carnaria*, Pennant, IV, p. 89, pl. 49, f. 32, right hand figure.

Shell transversely ovate, thin, much compressed, extremely fragile, subpellucid, and extremely glossy; umbones small, nearly central, their inflection to one side being hardly perceptible; the cartilage side somewhat produced, the other finely rounded; whole surface covered with extremely fine, somewhat irregular, concentric striæ; colour varying from pale skin-colour, white, citron-yellow, to carnations in almost all shades; sometimes plain, but for the most part with concentric zones, of lighter or darker shades of the prevailing colour of the shell; hinge with two primary teeth in each valve, one of them with a slight lateral tooth; inside glossy, and generally of the same hue as the external surface, but paler.

This very beautiful shell is common on all the sandy shores of Britain and Ireland.



6. *TELLINA FABULA*, pl. XL, f. 18.

*Tellina Fabula*, First Ed., pl. 16, f. 18; Donovan, III, pl. 97; Montagu, p. 61; Turton, Biv., p. 101; Maton and Rackett, p. 52; Fleming, p. 435; Leach, MSS., p. 7; Brown, Wernerian Mem., II, p. 507.

Shell transversely elongated, thin, pellucid, much compressed, and flexuous; anterior side narrowed and obliquely subtruncated, opposite side well rounded; umbones very small, nearly central, with a slight inclination to the cartilage side; colour generally white or pale yellow, frequently with a deeper tinge towards the umbones, and often exhibiting iridescent reflections; the left valve with very fine, regular, longitudinally diagonal striæ, obliquing from the superior portion of the posterior side towards the base; the right valve quite plain, or with remote, irregular, concentric, obsolete striæ; hinge with three teeth in the left valve, one of which is lateral, but not very remote from the cardinal ones; the right valve with only two cardinal teeth; inside smooth, glossy, white, with generally a darker tinge towards the hinge; margins plain, and very sharp.

This shell is liable to some variety, the diagonal striæ in various specimens only reaching a little more than half way along the posterior side.

Distinguished from *T. tenuis*, by its more lengthened and more acute anterior side, and especially by the left valve being diagonally striate. The two species are frequently found mixed in cabinets.

Inhabits many sandy bays in Britain and Ireland.

7. *TELLINA SIMILIS*, pl. XXXIX, f. 35.

*Tellina similis*, Sowerby, Brit. Miscell., p. 29, pl. 75; Montagu, Sup., p. 167; Turton, Biv., p. 102; Fleming, p. 435.

"Shell ovate, compressed; both valves diagonally striated five-sixths over the surface; beak not curved."—*Sowerby*.

Sowerby remarks that great similitude exists between this shell and the *T. Fabula*, but differs in being rounded at the narrower side, and destitute of the curvature, and in both valves being diagonally striated.

Found on the shores of Brighton, in company with *Tellina Fabula*.

8. *TELLINA ELLIPTICA*, pl. XL, f. 20, 21.

*Tellina elliptica*, First Ed., pl. 16, f. 20, 21; *Tellina planata*, Pennant, IV, p. 87, pl. 48, f. 29.

Shell elliptical, smooth, glossy, cream-white; umbones small and acute, placed much to one side, which is a little contracted, the other ample and rounded; hinge with three cardinal teeth in each valve, but no lateral teeth; inside smooth, white, and glossy; margins plain, and sharp. Length a quarter of an inch; breadth three-eighths.

Found at Dunbar, by the late General Richard Bingham.

9. *TELLINA PELLUCIDA*, pl. XL, f. 22.

*Tellina pellucida*, First Ed., pl. 16, f. 22.

Shell transversely oblong-ovate, very pellucid; umbones considerably produced, placed much to one side, but not inflected; anterior side very short; posterior side large, and elongated; colour bluish-white; with numerous, very fine, concentric, nearly obsolete striæ; hinge with two primary teeth in each valve, but destitute of lateral teeth.

Found at Seaton, County of Durham, by W. C. Trevelyan, Esq., and afterwards at Dunbar, by General Bingham.

10. *TELLINA SOLIDULA*, pl. XL, f. 14.

*Tellina solidula*, First Ed., pl. 16, f. 14; Montagu, p. 63; Maton and Rackett, p. 58; Forbes, p. 46; *Psammobia solidula*, Turton, p. 95, pl. 8, f. 2; Fleming, p. 438; *Tellina carnaria*, Pennant, IV, p. 88, pl. 32, f. 32, left hand figure, and f. 32 A; *Limecola solidula*, Leach, MSS., p. 7.

Shell strong, thick, convex, suborbicular; anterior side a little produced into a subacute beak, on which side the line from the umbo downwards is considerably more parallel than the other, and with a wide, longitudinal depression; posterior side well rounded; umbones placed nearly central, and rather blunted, hardly turning to either side; exterior surface dull, of various colours, yellowish-white, yellow, citron, flesh-colour, and rosy red; some plain, others banded or zoned; hinge with two small teeth in both valves; inside glossy, and of the same colours as the exterior, but the tints in general more vivid. Sometimes measures an inch in length; and an inch and a quarter in breadth.

Inhabits most of the coasts of Britain and Ireland, and burrows in sand four or five inches beneath the surface.

11. *TELLINA DONACINA*, pl. XL, f. 16.

*Tellina Donacina*, First Ed., pl. 16, f. 16; Montagu, p. 58, pl. 27, f. 3; Maton and Rackett, p. 50, pl. 1, f. 7; Turton, p. 102, pl. 8, f. 4; Fleming, p. 435; *Tellina trifasciata*, Pennant, IV, p. 88.

Shell transversely oblong-ovate, thin, compressed, subpellucid; umbones very small, placed much to one side; one side subtruncated, short, and terminating in a short beak below; the opposite side much elongated, and rounded; basal line nearly parallel, or very slightly arcuated; surface of a pale gamboge-yellow, with numerous, fine, concentric striæ, beautifully radiated, with interrupted rays of deep carnation; and also with transverse zones in many specimens; hinge with two teeth in one valve, that behind the umbo extending into a lateral lamina; and a single tooth in the opposite valve; inside smooth, glossy, generally of a rich yellow, and frequently with radiations corresponding to those of the outside; some specimens are nearly white, with, however, almost invariably a roseate mark below the umbones. General length about half an inch; breadth three-quarters.

This is one of the most beautiful of our British bivalves, and inhabits sandy shores. Salcomb Bay, Devon; Sandwich, Weymouth; Dublin Bay, Portmarnock, and Bantry Bay, Ireland; and the Friths of Forth and Clyde, Scotland.

GENUS 25.—*PSAMMOBIA*.—Lamarck.

Shell transverse, oblong, somewhat angular, gaping at each extremity, and covered with a thin, horny epidermis; with two short, bifid, cardinal teeth in the left valve, and one in the right valve; two distant, suborbicular, muscular impressions in both valves, situate near each end of the valve; pallial impressions with a very large sinus; ligament external, and supported upon a prominent fulcrum.

1. *PSAMMOBIA FERRÖENSIS*, pl. XL, f. 1, 2.

*Psammobia Ferröensis*, First Ed., pl. 16, f. 1, 2; Turton, Biv., p. 94; Fleming, p. 438; Forbes, p. 55; Maton and

Rackett, p. 49; *Tellina Ferröensis*, Maton and Rackett, p. 49; *Tellina fervensis*, Montagu, p. 55; *Tellina trifasciata*, Donovan, II, pl. 60.

Shell transversely oblong-ovate, somewhat subquadrangular; obliquely subtruncated at the anterior side; from the base of the truncation to the umbones runs an oblique, elevated ridge, where it forms an angle, and renders all the striæ above it angulated, and more rugose than on other parts of the shell; and with longitudinally oblique striæ; compressed, finely striated transversely; umbones obtuse, nearly central; surface elegantly radiated in sets of from three to six, with deep crimson and white alternating, and these are frequently crossed by two or three fillets of crimson; two cardinal teeth in each valve, but destitute of lateral ones; inside bluish-white, or pale lilac, sometimes of a delicate rosy hue; margin plain. When perfect, the external surface is covered with a very thin yellowish-brown epidermis.

This handsome species inhabits many of the sandy shores of Britain and Ireland, and especially prevails on both sides of the Irish Channel.

2. PSAMMOBIA VESPERTINA, pl. XL, f. 3.

*Psammobia vespertina*, First Ed., pl. 16, f. 3; Turton, Biv., p. 92, pl. 6, f. 10, young; *Solen vespertinus*, Maton and Rackett, p. 47; *Tellina variables*, Donovan, II, pl. 41, f. 2; *Tellina depressa*, Pennant, IV, p. 87, pl. 47, f. 27; *Sanguinolaria vespertina*, Fleming, p. 460; *Gobrcæus vespertinus*, Leach, MSS., p. 6.

Shell transversely oblong-ovate, rounded at both sides, moderately thick, and subcompressed; umbones rather small, and situate nearly central; surface white, or pale flesh-coloured, covered with very fine, concentric striæ; with numerous radiations of red, or purplish-red, disposed in single, double, or numerous rays, from the umbones to the base; two teeth in one valve, and one in the other, with a strong projecting lamina in both valves; inside smooth, glossy, and for the most part purple of different degrees of intensity in various individuals, but generally of a deeper hue in young shells; some are pale pink, bluish-white, or orange; sometimes with two rays below the umbo; margin plain, beautifully streaked with the prevailing colour in some specimens. Length an inch and five-eighths; and two inches and a half in breadth.

A small variety of this species is found at Loch Ryan, Scotland, with the sides more rounded; first noticed by William Nicol, Esq.

Found at Falmouth, Cornwall; Kingsbridge, Devonshire; Poole and Weymouth, Dorsetshire; the Irish Channel, of a large size; in several situations on the Eastern coast of Ireland; and the Frith of Forth, Scotland.

3. PSAMMOBIA TELLINELLA, pl. XXXIX, f. 30, 31.

*Psammobia tellinella*, Forbes, p. 55; *Psammobia florida*, Turton, Biv., p. 86, pl. 6, f. 9; Fleming, p. 437.

Shell transversely oblong-ovate, equally rounded at both sides, a little convex; umbones placed nearly central, and but slightly produced; colour pale bluish-violet, with longitudinal rays of reddish-purple, or brownish-purple, crossed by reddish zones of the same colour, or alternating with straw-yellow; hinge with a single cleft tooth in one valve, and a cavity on each side for the reception of the two teeth of the opposite valve; inside pale yellow, or rich reddish-purple; margins quite

plain, and rather sharp at the edges. Length half an inch; breadth one inch.

This species is much more inflated than *P. vespertinus*, when of this size, and more angular at the sides; and differs materially in the teeth.

Found on the Western coast, and Portmarnock, Ireland.

4. PSAMMOBIA POLYGONA, pl. XXXIX, f. 33.

*Psammobia polygona*, Turton, Biv., p. 96; Fleming, p. 439; *Tellina polygona*, Montagu, Sup., p. 27, pl. 28, f. 4.

Shell subovate, suborbicular, subcompressed; umbones ferruginous, small, subcentral, and inclining to neither side; shorter side somewhat truncated, and slightly angulated; larger side well rounded; colour cream-white, with very fine concentric striæ, which are decussated by excessively fine longitudinal striæ, and are invisible without the aid of a strong lens; inside dull white; margin uneven; two large, distant teeth in one valve, and one very large, bifid, triangular tooth in the other, with a very small approximate one. Length half an inch; breadth somewhat more.

Dredged off Cramond Island, Frith of Forth, by Captain Laskey.

5. PSAMMOBIA COSTULATA, pl. XXXIX, f. 34.

*Psammobia costulata*, Turton, Biv., p. 87, pl. 6, f. 8; Fleming, p. 437.

Shell transversely oblong-ovate, thin; slightly angular at the anterior end, which is provided with about twelve fine, obliquely longitudinal ribs, radiating from the umbones, which are nearly central, slightly produced, and not inclining to either side; colour varying from pale yellow to deep purple, and marked with crimson blotches and stripes; whole surface covered with extremely fine, longitudinal, and transverse striæ; inside of the same hue as the exterior, and generally more vivid; in one valve a slightly cleft tooth, which locks between two cardinal teeth in the opposite valve, one of which is slightly bifid.

Four specimens of this beautiful shell were taken by the dredge in the Channel and in Torbay, by Dr. Turton; three of them alive.

6. PSAMMOBIA JUGOSA, pl. XL, f. 4, 5, 6.

*Psammobia jugosa*, First Ed., pl. 16, f. 4, 5, 6; *Psammobia fragilis*, Turton, Biv., p. 88; Fleming, p. 438; *Tellina jugosa*, Brown, Wernerian Mem., II, p. 506, pl. 24, f. 2.

Shell transversely oblong-ovate, moderately strong, rather inflated; of a brownish-yellow colour; anterior side acuminate, and provided with an elevated, rapidly enlarging ridge, emanating at the umbo, and terminating on the side; posterior side much rounded; umbones placed towards the posterior side, rather large, elevated, and slightly turned to one side; whole surface covered with numerous, very sharp, elevated, concentric, somewhat waved, laminar striæ, the interstices thickly covered with decussated, extremely minute, longitudinal and transverse undulating striæ; hinge with two primary teeth, and a lateral one in each valve; in the left valve a large, broad, bifid, reflected, elevated tooth, which bends outwards, pointing to the umbo, two-thirds of which is elevated above the margin of the shell; the other tooth is thin, and small, running obliquely alongside the lateral tooth, which rises near the umbo, and obliques towards the anterior side, and is most elevated at its termination; over this tooth is placed the ligament; in the right valve the teeth are similar to those of the opposite valve, the

smaller being, however, a little stronger; inside yellowish or cream-white, with numerous, glossy, circular spots; pallial impression with a large sinus, placed transversely, but does not interrupt the pallial impression below, as it rises at the acuminate side.

Found in Bantry Bay, Killough, County of Down, and other places on the coast of Ireland.

7. *PSAMMOBIA LASKEYI*, pl. XXXIX, f. 32.

*Psammobia Laskeyi*, Turton, Biv., p. 89; Fleming, p. 438; *Tellina Laskeyi*, Montagu, Sup., p. 28, pl. 28, f. 3.

Shell transversely oblong-ovate, smooth, rather strong; umbones not quite central, and obtuse, hardly inflected; sides dissimilar, one rounded, the other obtusely pointed and obliquely subtruncated; colour purplish-white; covered with an olivaceous-yellow epidermis; inside purple, smooth, white round the margin, and destitute of the crenulæ; one valve with three approximate, subbifid teeth; the margin channelled from the teeth almost to the end of the longer side; on the other side of the teeth the margin is replicated, or folded back to the connecting cartilage, to which it is affixed; the opposite valve with only a single tooth, which locks in between the teeth of the other valve, these are reciprocally admitted into a cavity on each side in this valve, which is destitute of a channel on the margin. Length half an inch; breadth three-quarters.

Discovered, by dredging, in the Frith of Forth, by Captain Laskey.

FAMILY V.—LITHOPHAGI.

Shells which bore into clay, wood, and other substances; destitute of accessory pieces; more or less gaping at the anterior side; ligament situate exteriorly.

GENUS 26.—*SAXICAVA*.—Lamarck.

Shell transverse, irregular in form, generally oblong, inequilateral, subequivalve, gaping anteriorly; ligament exterior; two lateral, muscular impressions in each valve; pallial impression interrupted, but not sinuated; hinge, in the young condition, with sometimes two or three minute, obtuse, mostly indistinct, cardinal teeth, which become obsolete in the adult; two deep muscular impressions in each valve; pallial impression entire.

1. *SAXICAVA RUGOSA*, pl. XLVII, f. 14 and 16, and pl. XLVIII, f. 15, 16.

*Pholabia rugosa*, First Ed., pl. 9, f. 15, and *præcisa*, f. 16; Leach, MSS., p. 5; *Saxicava rugosa*, Lamarck, V, p. 501; Turton, Biv., p. 20, pl. 2, f. 10; Forbes, p. 56; *Hiatella rugosa*, Fleming, p. 461; *Mytilus rugosus*, Pennant, IV, p. 110, pl. 63, f. 72; Montagu, p. 164; Donovan, pl. 141; Maton and Rackett, p. 105.

Shell transversely oblong-ovate, somewhat inflated; and gaping at one side; umbones small, obtuse, and situate near to the anterior side; posterior side always rounded; anterior side generally subtruncated; surface brown or dull yellowish-white, with irregular, rugged, concentric wrinkles; inside white.

Fig. 16, pl. XLVIII, is the variety *Mytilus præcisus*, Montagu, p. 165, pl. 4, f. 2; Maton and Rackett, p. 105.

This species is liable to great variety in its external form, as will be seen by our various figures, being sometimes subquad-

angular or subcylindrical, frequently much distorted and wrinkled, at others almost smooth. It is a frequent inhabitant of the roots of the large *algæ*, and even penetrates the hardest limestone; it is met with on almost all the coasts of Britain and Ireland.

Fig. 16, pl. XLVII, is the variety called *Saxicava Pholadis*, Turton, Biv., p. 21, pl. 2, f. 11; and fig. 14 a still more globular form of the same species.

2. *SAXICAVA PURPUREA*, pl. XLII, f. 29, 30, 31.

*Mya purpurea*, Montagu, Sup., p. 21; *Agina purpurea*, Turton, Biv., p. 54, pl. 4, f. 9.

Shell transversely oblong-ovate; umbones purple, placed considerably to one side, and inflected towards the shorter end, which is rounded; the anterior end obliquely truncated; invested with a glossy, cream-white epidermis; under which the shell is pure white, and covered with irregular, transverse striæ; hinge with a single, obscure, erect tooth in each valve, and slightly cleft, which penetrate cavities in the opposite valve. Length about an eighth of an inch; breadth a quarter.

Taken in deep water, amongst corallines, on the Devonshire coast, by Colonel Montagu; and dredged at Torbay, by Dr. Turton.

GENUS 27.—*HIATELLA*.—Daudin.

Shell transverse, inequivalve, inequilateral, gaping at the superior margin, or anterior side; umbones small, blunted, placed considerably towards the posterior side; ligament external; hinge with a small, ill defined, single tooth in one valve, inserted between two obscure ones in the other; destitute of lateral teeth; two large and deep muscular impressions in each valve, those on the anterior sides largest, with a tongue-like prolongation from the side, pointing inwards; pallial impression entire.

1. *HIATELLA MINUTA*, pl. XLVII, f. 1.

*Solen minutus*, First Ed., pl. 13, f. 1; Lamarck, V, p. 453; Montagu, p. 53, pl. 1, f. 4; Maton and Rackett, p. 47; *Hiatella minuta*, Turton, Biv., p. 24; *Hiatella arctica*, Fleming, p. 461; *Saxicava rugosa*, young shell, Forbes; *Coramya spinosa*, Leach, MSS., p. 5.

Shell transversely subovate, rugose, slightly inflated; umbones placed towards the posterior side, which is rounded; anterior side subtruncated; one valve smaller than the other, each provided with two rows of concave spines, situate on the anterior side, emanating from the umbones, and terminating on the side, the superior row running parallel with the cartilage line, the other running diagonally downwards; under valve projecting slightly over the other, except at the shorter side; surface of a pale brown, or yellowish-white; inside smooth, glossy, white, sometimes tinged with ochre-yellow.

Found on most of the British and Irish coasts, burrowing in hard limestone rocks, clay, and other substances.

2. *HIATELLA OBLONGA*, pl. XLVII, f. 14.

*Hiatella oblonga*, Turton, Biv., p. 25, pl. 2, f. 13; *Hiatella arctica*, Fleming, p. 461.

Shell transversely oblong-ovate; posterior side rounded; anterior side subtruncated, slightly wrinkled transversely, rather prominent, and destitute of spines; umbones placed near the posterior side; surface of a pale brown, or yellowish-brown;

hinge with an obscure, conic tooth in one valve, and a cavity for its reception in the other, with an obscure, nearly obsolete tooth on each side of it.

This is so nearly allied to *H. minuta*, that we should have considered it a mere variety, but the total want of spines inclines us to think that it may be distinct. The figure we have given is from a specimen recently taken alive at Dunbar; Turton gives as its locality Torbay and Dublin Bay.

#### GENUS 28.—SPHENIA.—Turton.

Shell transverse, inequivalve, inequilateral, general form flat-tish wedge-shaped, gaping at the anterior end; hinge of the left valve with an elevated, transversely dilated tooth, that of the right valve with a concave tooth, and small denticle behind it; destitute of lateral teeth; two small muscular impressions in each valve; pallial impression with a large tongue-shaped sinus, emanating from the anterior side, and reaching nearly the middle of the valves; ligament external.

##### 1. SPHENIA BINGHAMI, pl. XLII, f. 17, 18, and 22.

*Sphenia Binghami*, First Ed., pl. 14, f. 16, 17, 18; Turton, Biv., p. 36, pl. 3, f. 4, 5, and pl. 19, f. 3; Fleming, p. 465.

Shell transversely oblong-ovate, subcompressed, wedge-shaped, truncated at the hinge, with the superior margin frequently a little contracted about the middle, gradually tapering towards the anterior end, which is slightly gaping, and subtruncate; umbones rather prominent, with their beaks not quite opposite, but divaricating from each other; whole surface covered with a brown, wrinkled epidermis, which extends beyond the anterior side; inside glossy, white, with a purplish tint; the margin plain, and sharp; the elevated tooth gradually diminishing, and extending nearly half way along the hinge line. Length a quarter of an inch; breadth half an inch.

Found among the rocks at Torbay, by Dr. Turton and Gen. Bingham, after whom it was named by the doctor.

##### 2. SPHENIA SWAINSONI, pl. XLII, f. 16, 23, 24.

*Sphenia Swainsoni*, Turton, Biv., p. 37, pl. 3, f. 3, and pl. 19, f. 2.

Shell transversely oblong-oval, wedge-shaped; the anterior side round; umbones nearly central; a concave tooth, lying horizontally, and pointing inwards. Length a quarter of an inch; breadth about half an inch.

This species is somewhat more oval in its form than the *S. Binghami*.

Found among the rocks at Torbay.

##### 3. SPHENIA DECUSSATA, pl. XLV, f. 3.

*Mya decussata*, First Ed., pl. 10, f. 3; Montagu, Sup., p. 20, pl. 28, f. 1; Fleming, p. 463; *Sphenia decussata*, Turton, Biv., p. 38.

Shell suborbicular, slightly inflated; umbones obtuse, recurved, and situate nearest the posterior side; colour yellowish-white, crossed by rather remote, concentric ridges, which are decussated by strong, regular, longitudinal striæ, forming tubercles at the anterior end; inside smooth, white; in one valve a broad, erect tooth; in the other a projecting lamina, with a small pit for the reception of the tooth in the opposite valve. Length not quite half an inch; breadth somewhat more.

Found in the Frith of Forth, by Captain Laskey.

#### FAMILY VI.—CORBULACEA.

Shell inequivalve, and for the most part one valve somewhat larger than the other; ligament placed interiorly.

#### GENUS 29.—PANDORA.—Bruguière.

Shell free, thin, internally pearly, inequivalve, transverse, inequilateral; the anterior side the longer, subrostrated, and slightly gaping at its extremity; one valve flat, with two internal, anterior ribs, and with its anterior margin turned downwards, provided with a single, oblong, obtuse, cardinal or hinge tooth, situate behind the ligament; the opposite valve concave, and destitute of teeth, but furnished with an indistinct cicatrice, on which the tooth of the flat valve rests, when the shell is closed; in each valve are two distant, lateral, muscular impressions; ligament internal, its sides lodged in, and attached to an elongated cicatrice, which lies inclined to the anterior side of the valves; in some species the cicatrix is produced into an elongated, divergent lamina, stretching from the umbo towards the anterior side of the shell, and terminating near the inner side of the anterior muscular impression.

##### 1. PANDORA ROSTRATA, pl. XLVII, f. 5, 12, 13.

*Trutina solenoides*, First Ed., pl. 13, f. 5; *Pandora margaritacea*, Turton, Biv., p. 40, pl. 3, f. 11, 12, 13, 14; *Pandora inequivalvis*, Fleming, p. 466; *Solen pinna*, Montagu, p. 566; *Tellina inequivalvis*, Montagu, p. 71; *Ib.*, Sup., p. 27; Donovan, II, pl. 41, f. 1; Maton and Rackett, p. 50.

Shell transversely oblong and subovate, thin, and brittle; one valve nearly flat, the other moderately convex; the hinge line of both valves arcuated; umbones placed much to one side; posterior side extending into a lengthened, obtusely subtruncated beak; the other side short, and rounded; surface cream-white, with a pearly gloss, smooth in some specimens, but transversely wrinkled in others; two teeth in both valves, but destitute of lateral ones; inside white, and slightly nacreous; each valve provided with a blunt tooth, running parallel from the umbo, that in the convex valve largest, and with an uneven surface, these not inserted, but stand by the side of each other, when the valves are closed. Length nearly half an inch; breadth one inch; but sometimes considerably more.

This species inhabits the sea at Dawlish, Guernsey; and in several places on the Irish coast.

#### GENUS 30.—CORBULA.—Bruguière.

Shell inequivalve, one valve being generally small and flattened, the other large and convex; subequilateral, transverse, generally gibbose and close; each valve usually furnished with a single, conical, recurved, ascending, pointed tooth, at the side of which is a small concave depression,—very deep in some species, which serves either for the reception of the ligament, or the tooth of the opposite valve; two distant, lateral, somewhat irregular, muscular impressions in each valve; pallial impression posteriorly angulated, with a very small sinus; ligament internal, fixed to the tooth of the lesser valve, and inserted in the depression by the side of the tooth, in the larger valve.



## 1. CORBULA NUCLEUS, pl. XLII, f. 7, 8, 9.

*Corbula nucleus*, First Ed., pl. 14, f. 7, 8, 9; Lamarck, V, p. 496; Turton, Biv., p. 39, pl. 3, f. 8, 9, 10; *Corbula striata*, Fleming, p. 425; *Mya inequalis*, Montagu, p. 38, pl. 26, f. 7; Maton and Rackett, p. 40, pl. 1, f. 6.

Shell subtriangular, strong, thick, opaque, white; with an umber-brown, rather thick epidermis; under valve very convex, with a large, tumid, inflected umbo, considerably elevated above the hinge; upper valve flat, or somewhat concave, with a small but acute umbo, and little more than half the size of the other, provided with a few short, distant, irregularly divergent striæ, which emanate from near the central disk of the shell, and terminate on the margin; larger valve with one strong, erect, somewhat recurved tooth, which is received into a socket in the smaller valve; inside smooth, dull white; the margin somewhat flattened, and that of the larger valve projecting considerably beyond the other, when closed.

This species is by no means uncommon on most of the coasts of Britain and Ireland. It attains a large size in the latter country.

## 2. CORBULA OVATA, pl. XLII, f. 32, 33.

*Corbula ovata*, Forbes, p. 53, pl. 2, f. 8, 9.

"Shell ovata-oblong, almost equilateral, with obsolete transverse striæ; white, covered with a brown epidermis, which is worn away at the upper part of the shell, but bears the traces of regular, transverse striæ towards the margin; the anterior extremity is slightly truncate, the posterior rounded; beaks depressed; translucent.

"In form this species resembles the *Corbula rosea*, but is more elongated transversely; the teeth are very similar.

"Taken from the root of a *Fucus*, cast ashore at Ballaugh, Isle of Man."—*Forbes*.

## 3. CORBULA ROSEA, pl. XLII, f. 6.

*Corbula rosea*, First Ed., pl. 42, f. 6; Leach, MSS.

Shell subtriangular, subovate, subcompressed, its breadth considerably exceeding its length; under valve but a little larger than the other, its umbo of moderate size; surface smooth, covered with a very thin, pale yellow epidermis, beneath which the shell is of a beautiful roseate hue, with a few short radiations of a darker cast, near the umbones; inside smooth, of a pale rose-colour; margins smooth, and glossy.

This shell differs considerably from the young of *C. nucleus*, in being devoid of the peculiar curve of that shell; in the beaks of the lower valve being much less, and a less disparity in the size of the upper and under valve; and in being much more compressed.

In the cabinet of Dr. Leach, British Museum, and were dredged at Falmouth.

## FAMILY VII.—MACTRACEA.

Shells equivalve, frequently gaping at the lateral extremities; ligament situate interiorly, or partly external.

## Section I.—Ligament seen externally, or double.

## GENUS 31.—AMPHIDESMA.—Lamarck.

Shell equivalve, transverse, slightly inequilateral, somewhat ovate, or orbicular; some species gaping at the sides, with a slight posterior fold; each valve provided with one, or in some

instances two small, slender, cardinal teeth; and two distinct, elongated, lateral teeth, situate near the hinge in one valve, and almost obsolete in the other; ligament double, separated from the cartilage, its external portion slender, and rather short, the internal cartilage generally longer and larger, adherent in both valves to an elongated, oblique groove or pit, which varies in length in different species, takes its rise immediately within the umbo, and is prolonged within the anterior lateral tooth; two muscular impressions in each valve; pallial impression with a very large sinus.

## 1. AMPHIDESMA BOYSII, pl. XLII, f. 3.

*Ligula Boysii*, First Ed., pl. 14, f. 3; Lamarck, V, p. 491; *Amphidesma Boysii*, Turton, Biv., p. 53, pl. 5, f. 4, 5; *Mactra Boysii*, Montagu, p. 98, pl. 3, f. 7; Maton and Rackett, p. 72.

Shell oval, subcompressed, thin, pellucid, glossy, white, and nearly smooth; with a few remote, obsolete, concentric striæ; umbones very small, with the beaks slightly inflected, situate nearest to the posterior side; one cardinal tooth in each valve, with a broad, cartilage cavity; one valve only provided with broad, elevated, lateral teeth; inside smooth, glossy, and white; two muscular impressions; the pallial impression with a large, nearly obsolete sinus, running from the smaller side, almost two-thirds across the valves, and nearly parallel with the margin. Length somewhat more than half an inch; breadth a little more than three-quarters.

Plentiful on most of the British and Irish coasts.

## 2. AMPHIDESMA TENUE, pl. XLII, f. 2.

*Ligula tenuis*, First Ed., pl. 14, f. 2; *Mactra tenuis*, Montagu, p. 572; *Ligula tenuis*, Montagu, Sup., pl. 17, f. 7; *Amphidesma tenue*, Turton, p. 53; Forbes, p. 47; Fleming, p. 433.

Shell subtriangular, compressed, equilateral, semipellucid, thin, white; with shallow, concentric wrinkles; umbones small, considerably produced, placed nearly central, and not turning to either side; inside moderately smooth, and glossy; pallial impression interrupted by a broad, conical, nearly perpendicular, pointed sinus, reaching nearly two-thirds up the valves; hinge provided with a cleft tooth, a narrow groove, and remote, laminated, lateral teeth, one on each side in one valve; the other with a plain, single tooth, which is received into a cavity in the opposite valve; destitute of lateral teeth. Length a quarter of an inch; breadth somewhat more.

Found on the coasts of Hampshire, Dorset, and Devon.

## 3. AMPHIDESMA PRISMATICA, pl. XLII, f. 5.

*Ligula prismatica*, First Ed., pl. 14, f. 5; Montagu, Sup., p. 23, pl. 26, f. 3; *Amphidesma prismaticum*, Fleming, p. 432.

Shell transversely oblong-ovate, flat, thin, fragile, glossy, pellucid, white, exhibiting prismatic reflections; with very minute, concentric striæ; umbones very small, inflected, and placed towards the narrow side, which is considerably acuminate, with a slight oblique subtruncation, below which it is pointed; opposite side finely rounded; hinge furnished with a horizontal tooth, with a cavity in the centre for the reception of the connecting cartilage, and the addition of a small, lateral, laminar, remote tooth on each side of the larger tooth, in one valve, but devoid of these in the other valve. Length three-eighths of an inch; breadth upwards of six-eighths.

Found pretty plentifully in the Frith of Forth, the south coast of Devon, and by no means rare at Portmarnock, Ireland, and other parts of the coast.

## 4. AMPHIDESMA TRUNCATA, pl. XLII, f. 4.

*Ligula truncata*, First Ed., pl. 14, f. 4; *Amphidesma truncatum*, Fleming, p. 431.

Shell subovate, rather convex, oblique; anterior side produced; posterior side rather straight, and subtruncated below; with a flexure, emanating from the umbo, and terminating on the margin; umbones small, nearly central, and slightly inflected, beneath them a lanceolate cavity or lunule, covered with transverse, nearly obsolete striæ, and wrinkles; surface white, smooth, and glossy; hinge with a double primary tooth in each valve, and a small tooth-like knob in the left valve, locking into a cavity for its reception in the opposite one; inside smooth, glossy, and white; each valve provided with two large muscular impressions; margins rather thick, for the size of the shell. Length three-eighths of an inch; breadth half an inch.

Found at Greenock, by Stewart Ker, Esq., and is in the cabinet of Lady Jardine.

## GENUS 32.—LIGULA.—Montagu.

Shell inequivalve, inequilateral, transversely elongated; with a large, broad, strong, transverse, spoon-like tooth in each valve, projecting inwards, each furnished with a pit for the insertion of the cartilage; right valve furnished with a pretty large, elevated, erect, compressed tooth, situated close below the beak, fitting into a hiatus for its reception, which reaches to the beak, in the opposite valve; and in some species a minute tooth; external surface with a very thin, membranaceous epidermis; two muscular impressions in each valve, situate very close to the extreme sides of the valves, the posterior ones double, and extending to nearly the umbones; pallial impression with a rather large, transverse sinus, situated posteriorly.

## 1. LIGULA PRÆTENUIS, pl. XLII, f. 1.

*Ligula prætenus*, First Ed., pl. 14, f. 1; *Anatina prætenus*, Turton, Biv., p. 48, pl. 4, f. 4; *Amphidesma prætenue*, Fleming, p. 432; *Bontea prætenus*, Leach, MSS., p. 6; *Mya prætenus*, Montagu, p. 41, pl. 1, f. 2; Donovan, V, pl. 178.

Shell oval, thin, very brittle, compressed, and semipellucid; umbones nearly central, very small; beaks rather acute, and inflected; posterior side rounded; anterior side somewhat acuminate, and obliquely subtruncated, at which extremity the valves are a little open; surface cream-white, transversely wrinkled, with extremely fine, nearly obsolete, concentric striæ, covered with an extremely thin, cream-coloured, somewhat pilous epidermis; hinge with a broad, horizontal, internally projecting, hollow tooth in each valve; inside white. Length about half an inch; breadth somewhat more than an inch.

This rare British shell has been found at Poole, and other places on the Dorsetshire coast; the south coast of Devon; Frith of Forth; and Portmarnock, Ireland.

## GENUS 33.—TELLIMYA.—Brown.

Shell equivalve, inequilateral, suborbicular, or transversely elongated, close all round; left valve destitute of cardinal teeth, but provided with a pretty large hiatus, and two projecting lateral teeth, each having a groove in its centre; sometimes with one or two rather long teeth on the right side; right valve

with two recurved, prominent teeth, which occupy the vacant space below the umbo in the opposite valve; muscular impressions large and distinct; pallial impression entire.

## Section I.—Shells orbicular.

## 1. TELLIMYA SUBORBICULARIS, pl. XLII, f. 14, 15.

*Tellimya suborbicularis*, First Ed., pl. 14, f. 14, 15; *Mya suborbicularis*, Montagu, p. 39, pl. 26, f. 6; Maton and Rackett, VIII, p. 41; *Kellia suborbicularis*, Turton, Biv., p. 57, pl. 11, f. 5, 6; Fleming, p. 430; Forbes, p. 49; *Bomia inflata*, Phillipi.

Shell suborbicular, very convex, thin, subpellucid; umbones obtuse, nearly central, slightly inflected; sides almost equal, rounded; basal margin nearly parallel; surface of a yellowish-white colour; somewhat glossy, with faint concentric striæ; hinge with a single tooth in one valve, immediately under the beak, locking into a double incurved one in the opposite valve, with a somewhat laminated tooth behind the umbo in each valve; inside glossy, white. Length three-eighths of an inch; breadth half an inch.

Some specimens exhibit a fine pearlaceous lustre, when deprived of the epidermis.

Inhabits the Frith of Forth, Plymouth, Salcomb Bay, and coasts of the Isle of Man. It is a borer, and penetrates the hardest limestone; Forbes found it in the cavities of dead bivalves.

## 2. TELLIMYA LACTEA, pl. XLII, f. 10, 11.

*Tellimya lactea*, First Ed., pl. 14, f. 10, 11; Brown, Conch. Text Book, p. 138, pl. 17, f. 14.

Shell nearly orbicular, inflated, thin, pellucid, and glossy white; one valve with two teeth, locking into a triangular void in the opposite valve, with transverse laminae on each side; left valve with a single, recurved, cardinal tooth, and a central, triangular, lamellated tooth; and one remote, lateral tooth only. About a quarter of an inch in diameter.

Found on the Devonshire coast, by Dr. Leach.

## 3. TELLIMYA TENUIS, pl. XLII, f. 12, 13.

*Tellimya tenuis*, First Ed., pl. 14, f. 12, 13.

Shell orbicular, smooth, glossy, snow-white, with fine, irregular, concentric striæ, much inflated; umbones rather produced, and much turned to one side; left valve destitute of cardinal teeth, but provided with two large lateral teeth; right valve with two incurved, cardinal teeth, and a lateral one; inside white, and when viewed through a strong lens, has a shagreen-like appearance. Diameter three-eighths of an inch.

Found at Newbigging, Northumberland, by W. C. Trevelyan, Esq., and is in the cabinet at Wallington.

## Section II.—Shells transversely ovate.

## 4. TELLIMYA ELLIPTICA, pl. XLII, f. 16, 17.

*Tellimya elliptica*, First Ed., pl. 14, f. 16, 17; *Mya ferruginosa*, Montagu, Sup., p. 22 and 166, pl. 26, f. 2; *Montacuta ferruginosa*, Turton, Biv., p. 60.

Shell transversely subovate, moderately convex, white, with obsolete, concentric wrinkles, and sometimes blotched with rust-coloured spots; umbones obtuse, situate nearest one side; basal margin nearly parallel; hinge with two projecting teeth, one of which is erect, the other slopes inwards and downwards, these

are separated by a triangular hiatus, below the umbo; inside glossy, white. Length a little more than a quarter of an inch; breadth nearly half an inch.

Found at Belton Sands, near Dunbar; and Turton says it inhabits the Western coasts.

5. *TELLIMYA GLABRA*, pl. XLII, f. 20, 21.

*Tellimya glabra*, First Ed., pl. 14, f. 20, 21.

Shell elliptical, moderately inflated, thin, smooth, extremely glossy; umbones obtuse, placed considerably to one side; shorter side obliquely subtruncated, the other rounded; hinge with one broad primary tooth in each valve, and a large hiatus immediately under the umbones in both valves; inside smooth, glossy; margins sharp. Length nearly a quarter of an inch; breadth about half an inch.

Found by General Bingham, at Dunbar; in his cabinet, and also that of Lady Jardine.

6. *TELLIMYA BIDENTATA*, pl. XLIV, f. 8, 9.

*Anatina bidentata*, First Ed., pl. 11, f. 8, 9; *Montacuta bidentata*, Turton, Biv., p. 60; *Mya bidentata*, Montagu, p. 44, pl. 2, f. 5; Brown, Ency. Brit., VI, p. 405.

Shell suboval, thin, compressed, smooth, white, but not glossy; umbones small, situate nearest to one side, and slightly bent; hinge with two broad, erect, laminated teeth in one valve, these stand obliquely outwards from the beak, and somewhat distant from each other, between these, and immediately under the umbo, is a slight triangular cavity for sustaining the cartilage; opposite valve with a triangular hiatus, situate immediately below the umbo, for the reception of the opposite teeth. Length an eighth of an inch; breadth rather more.

Found in Salcomb Bay, burrowing in decayed thick oyster shells.

7. *TELLIMYA SUBSTRIATA*, pl. XL, f. 23.

*Tellimya substriata*, First Ed., pl. 16, f. 23; *Montacuta substriata*, Turton, Biv., p. 59, pl. 11, f. 9, 10; *Ligula substriata*, Montagu, Sup., p. 25.

Shell subovate, somewhat oblique, a little inflated, slightly contracted in the middle of the valves, subpellucid, white, sometimes with a ferruginous tinge; umbones prominent, straight, and not quite central; one side short and narrowed, the opposite ample and rounded; surface covered with elevated, distant, nearly obsolete striæ; hinge with a cleft side tooth, a narrow grooved tooth on the opposite side, and a hiatus between them, immediately under the umbo; teeth in the opposite valve very indistinct, if any, with a central triangular hiatus. Diameter about the tenth of an inch.

Found attached to corallines, on the Devonshire coast; and to spines of the *Echinus purpureus*, to which they are attached by slender filamentary processes, emanating from the middle of the margin.

*Section III.—Ligament internal; shell gaping at the sides.*

GENUS 34.—*MACTRA*.—Linnaeus.

Shell generally thin, sometimes thick; equivalve, for the most part nearly equilateral, and more or less regularly triangular; slightly gaping at one end, and almost imperceptibly so at the other; each valve with one V shaped cardinal tooth, the point being next the umbo, diverging from it, and in some species the limbs are disunited at the base, so as to give the appearance

of two distinct teeth; close on the posterior side is situate a very thin, sharp tooth; immediately behind the angular tooth is placed the pit for the reception of the ligament, and projecting somewhat within the shell; one valve with two lateral teeth on each side, and one on both sides in the other, diverging from the beaks, near the margin of the shell, and fitting into the space between the two in the opposite valve; two lateral, remote, muscular impressions; pallial impression with a small sinus; ligament consisting of two portions, the one considerably larger than the other and internal, and the other half external; two strong, lateral, muscular impressions in each valve; pallial impression interrupted by a small sinus.

*Section I.—Lateral teeth smooth; shell fragile.*

1. *MACTRA GLAUCA*, pl. XLI, f. 1.

*Mactra glauca*, First Ed., pl. 15, f. 1; Montagu, p. 571; Donovan, IV, pl. 125; Turton, Biv., p. 73; Fleming, p. 428; *Mactra helvacea*, Lamarck, V, p. 473.

Shell subtriangular, thin; anterior side slightly wrinkled; umbones somewhat obtuse, a little reflected, with a narrow intervening gap; surface of a cream-yellow colour, very finely striated transversely, and with irregular, broad and narrow glaucous radiations of a pale brown-colour; inside of a pale cream-colour, or purple; margins thin, and sharp.

Found on the coast of Cornwall; but I am not aware that any living specimens have been met with, the locality not having been yet detected.

2. *MACTRA STULTORUM*, pl. XLI, f. 2.

*Mactra Stultorum*, First Ed., pl. 15, f. 2; Montagu, p. 94; Donovan, III, pl. 106; Turton, Biv., p. 72; Maton and Rackett, p. 69.

Shell subtriangular, thin, semipellucid; umbones central, rather prominent, and frequently of a purplish hue; sides nearly equal; surface covered with a yellowish-brown, or fawn-coloured epidermis, frequently of a cream-colour, beneath which the shell is elegantly radiated with deeper brown, or brownish-purple, irregular in number, some broad, others narrow, and frequently with transverse zones of a paler colour; inside pale lilac, which frequently penetrates to the outside, giving it the same cast of colour; when the epidermis is removed, it is found to be covered with faint, somewhat irregular, transverse striæ. Varying in length from an inch and a half to nearly two inches; and in breadth from one inch and three-quarters to nearly two inches and a half.

This species is found on most of the British and Irish coasts. Some specimens are entirely destitute of rays.

3. *MACTRA DEALBETA*, pl. XLI, f. 8, 9.

*Mactra dealbeta*, First Ed., pl. 15, f. 8, 9; Pulteney, Cat. Dorset, p. 31; Montagu, p. 95, pl. 5, f. 1; Maton and Rackett, p. 68, pl. 1, f. 10; Fleming, p. 429.

Shell transversely ovate, thin, fragile, moderately inflated; umbones not quite central, but situate nearer the larger side; gaping a little at the narrower side; colour grayish or brownish-white, very finely striated concentrically, and with a few coarser transverse wrinkles; middle tooth in one valve broad, cleft, and angulated close to the beak; lateral teeth not very remote; inside glossy, white; margin plain, with a sharp edge.

Found at Weymouth, by Mr. Bryer, but is extremely rare; if it is not merely a variety of *M. Stultorum*.

*Section II.—Lateral teeth striated; the shell strong.*

4. *MACTRA SOLIDA*, pl. XLI, f. 3, 4.

*Mactra solida*, First Ed., pl. 15, f. 3, 4; Montagu, p. 92; Donovan, II, pl. 61 and 126; Turton, Biv., p. 67; Fleming, p. 426.

Shell subtriangular, strong; sides nearly equal; umbones almost central; lateral teeth large, prominent, and striated; surface white, or yellowish-white, with a few concentric ridges. General length an inch and a half; breadth an inch and three-quarters; although it not unfrequently attains the size of our figure.

Not unfrequent on many of the sandy shores of Britain and Ireland; it lurks a few inches below the surface.

5. *MACTRA TRUNCATA*, pl. XLI, f. 5.

*Mactra truncata*, First Ed., pl. 15, f. 5; Montagu, Sup., p. 34; Turton, Biv., p. 68; Fleming, p. 427; *Mactra subtruncata*, Donovan, IV, pl. 126.

Shell triangular, very strong, thick, and nearly smooth, but with a few remote, transverse, nearly obsolete lines of growth; sides nearly equal, considerably flattened, and truncated; umbones rather prominent; colour yellowish-white. Ordinary length an inch and a half; breadth an inch and three-quarters.

Some Conchologists consider this as a mere modification of *M. solida*, but we possess it from the smallest size to the adult, and the same form is preserved in all its stages. It differs also from the latter species in the pallial sinus being broader, and does not run so far into the shell; it is invariably stronger.

Plentiful in the Frith of Forth, of a large size; and is not unfrequently met with on many of the British and Irish coasts.

6. *MACTRA SUBTRUNCATA*, pl. XLI, f. 7.

*Mactra subtruncata*, First Ed., pl. 15, f. 7; Montagu, p. 93; Ib., Sup., p. 34, pl. 27, f. 1; Turton, Biv., p. 70; Fleming, p. 427; Forbes, p. 48; *Mactra Stultorum*, Pennant, pl. 52, f. 42.

Shell subtriangular, strong, moderately convex; umbones large, prominent, placed considerably to one side, and nearly straight; the shorter side rounded, the other produced, and a little pointed; the anterior side so much flattened below the umbones, that it presents an elongated, cordiform shape, when viewed straight in front; external surface yellowish-white, with pretty strong, transverse striæ, and sometimes with inequidistant, strongly marked lines of growth; inside smooth, yellowish-white. Length rarely exceeding three-quarters of an inch; breadth an inch.

Common on most sandy shores.

7. *MACTRA STRIATA*, pl. XLI, f. 10.

*Mactra striata*, First Ed., pl. 15, f. 10; Brown, Ency. Brit., VI, p. 471.

Shell transversely elongated, rather strong; umbones small, subcentral; anterior side subdepressed, and rounded; posterior side elongated, and subovate, its superior line gently arcuated, as well as the basal margin; surface brownish-yellow, covered with strong, transverse, equidistant striæ; inside smooth, white.

This species bears a strong similitude to *M. subtruncata*, but differs in the posterior side being less acute, the umbones being much smaller in proportion to the size of the shell, in the striæ assuming nearly the character of ribs, and in the shell being considerably larger.

I procured this species in Lough Strangford, County of Down, Ireland.

8. *MACTRA ELLIPTICA*, pl. XLI, f. 6.

*Mactra elliptica*, First Ed., pl. 15, f. 6; Forbes, p. 48.

Shell transverse, rather thin, elliptical, or slightly subtriangular; sides nearly equilateral, and slightly rounded; umbones nearly central, very much depressed; cardinal margin prominent; surface covered with a thin, yellowish-brown, glossy epidermis, beneath which the shell is nearly smooth, or obsoletely striated transversely, which, however, can only be seen by the aid of a strong lens; teeth similar to the other species of this section, but much smaller in proportion to the size of the shell; inside smooth, white, and glossy.

This shell was mistaken for the young of *M. solida*, but its more elliptical form, its epidermis, and thinness, at once distinguish it from that species; which characters it preserves in all stages of growth.

Found frequently in the Frith of Forth, and can readily be procured at Cramond Island, at low water. Forbes found it on the north coast, Isle of Man.

GENUS 35.—*MACTRINA*.—Brown.

Shell subtriangular, equivalve, nearly equilateral; umbones nearly central; left valve with a strong, central, triangular, slightly bifid tooth, which locks into a corresponding pit in the opposite valve; on each side of which are triangular, transverse pits, for the reception of two small, depressed, cardinal teeth in the right valve; ligament external; two strong muscular impressions in each valve; pallial impression entire.

1. *MACTRINA TRIANGULARIS*, pl. XL, f. 25.

*Mactrina triangularis*, First Ed., pl. 16, f. 25; Brown, Conch. Text Book, p. 140, pl. 18, f. 30; *Goodallia triangularis*, Turton, Biv., p. 77, pl. 6, f. 14; Fleming, p. 429; Forbes, p. 48; *Mactra triangularis*, Montagu, p. 99, pl. 3, f. 5.

Shell elongated, subtriangular, strong; sides a little unequal; umbones prominent, obtuse; white, subopaque, smooth; hinge with a large, bifid, central, strong, cardinal tooth, in one valve, and a pit on each side; opposite valve with a triangular, central pit, for the reception of the tooth in the other valve, and a small tooth on each side of the pit, which lock into the corresponding pits; inside rather dull white; the margin strongly crenated. Length one-eighth of an inch; breadth somewhat less.

Found in sand at Falmouth Harbour; Portmarnock, Ireland; and Dunbar, Scotland; very rare; and on the Maux coast, by Professor Forbes.

2. *MACTRINA MINUTISSIMA*, pl. XLII, f. 25, 26.

*Goodallia minutissima*, Turton, Biv., p. 77, pl. 6, f. 15; Fleming, p. 429; Forbes, p. 48; *Mactra minutissima*, Montagu, Sup., p. 37.

Shell rather strong, subtriangular, white, and almost smooth; umbones prominent, nearly central; sides very flat; basal margin nearly parallel, but gently rounded at each extremity; hinge strong; two cardinal teeth in one valve, with an intermediate, pretty large, central cavity for the reception of the large, cardinal, triangular tooth with which the opposite valve is provided; inside smooth, glossy; margin plain. Somewhat less than a quarter of an inch in length.



This species might easily be mistaken for the young of *M. triangularis*, but will be distinguished from that shell in being less angulated, in wanting crenulations on the margin, and its breadth proportionably greater; it is, besides, a considerably smaller shell.

Found on the coast of Cornwall, the Western coasts, and in Ireland. Forbes says it inhabits the byssi of Modioli from deep water off Douglas, Isle of Man.

#### GENUS 36.—LUTRARIA.—Lamarck.

Shell equivalve, inequilateral, thin, transversely ovate or oblong; open at both sides; the posterior side generally the longer, and always gaping more than the other; one valve with two thin, laminar teeth, one of which is sometimes compound; the opposite valve with three teeth, the central one compound in some instances, and the posterior one slender and compressed; ligament internal, situate in a deltoidal, oblique, internally projecting, spoon-shaped pit, with a prominent margin placed next to the teeth in each valve; two distant, lateral, muscular impressions; pallial impression with a very large sinus, lying transversely in most species.

##### 1. LUTRARIA ELLIPTICA, pl. XLIII, f. 2, 3.

*Lutraria elliptica*, First Ed., pl. 12, f. 2, 3; Lamarck, V, p. 468; Turton, p. 65; Forbes, p. 54; *Lutraria vulgaris*, Fleming, p. 464; Pennant, IV, p. 92, pl. 52, f. 44; Montagu, p. 99; Donovan, II, pl. 58.

Shell transversely oblong-ovate, thin, compressed; longer side with a shallow groove, emanating from the base of the umbones, and terminating on the margin, over which there are some irregular striæ-like lines, which when the epidermis is removed, present the appearance of being scratched by a file; umbones small, placed near to one side; surface with fine, nearly obsolete, irregular, concentric striæ, or grooves, and irregularly wrinkled transversely, these are shallow on the disks, but stronger and more decided towards the sides, covered with a pretty strong epidermis, of a drab-colour, rarely approaching to fawn; sometimes with a few indications of lines of growth, and in some these assume the appearance of nearly obsolete ridges, particularly towards the shorter side; inside smooth, bluish-white; and gaping at both sides.

Found on many of the British coasts with a sandy bottom, especially at the influx of rivers.

Fig. 3 is a very thick shell, in proportion to its size, which I figured from the collection of Sir John Trevelyan, Bart., at Wallington, Northumberland.

##### 2. LUTRARIA SOLENOIDEA, pl. XLIII, f. 1.

*Lutraria solenoidea*, First Ed., pl. 12, f. 1; Lamarck, V, p. 468; *Lutraria oblonga*, Turton, Biv., p. 64, pl. 5, f. 6; *Lutraria hians*, Fleming, p. 465; *Psammophila solenoidea*, Leach, MSS., p. 6; *Mactra hians*, Montagu, p. 101; Donovan, III, pl. 140.

Shell transversely oblong-ovate, greatly inequilateral; umbones small, depressed; surface with rugose, concentric wrinkles, which prevail most at the posterior side, covered with an opaque, dark brown, thick, dusky epidermis, sometimes of a reddish tinge; hinge provided with one flattened tooth, which is grooved on the fore part, and locks between two

in the opposite valve, the smallest of which is cleft; the cartilage pit is large and triangular; inside smooth, white, with an elevated, transverse ridge, situate on the upper side of the posterior muscular impression; gaping considerably at the posterior side.

An extremely local species, but is said to be not uncommon at the influx of the river between Truro and Falmouth, in Cornwall; and has been found on the Dorset coast.

##### 3. LUTRARIA COMPRESSA, pl. XLIII, f. 4.

*Lutraria compressa*, First Ed., pl. 12, f. 4; Lamarck, V, p. 469; *Listeria compressa*, Turton, Biv., p. 51, pl. 5, f. 1, 2; *Abra compressa*, Leach, MSS., p. 6; *Amphidesma compressum*, Fleming, p. 432; *Mactra Listeri*, Gmelin, p. 3261; *Mactra compressa*, Montagu, p. 96; *Tellina plana*, Donovan, II, pl. 64, f. 1.

Shell transversely subovate and subtriangular, thin, brittle, much compressed; umbones not quite central, and rather obtuse; anterior side well rounded; posterior side a little longer than the other, and slightly acuminate; external surface of a dull yellowish-white, covered with pretty strong, transverse striæ-like wrinkles; cartilage cavity large, triangular; primary teeth small, a single one which locks into a cleft tooth in the opposite valve; inside smooth, white, and rather dull; pallial sinus very large, occupying nearly a half of the interior surface; margin plain.

A common species on most of the British coasts, and prevails at the mouths of rivers.

#### SECTION IV.—CRASSIPEDES.

The mouth united in front, or partly so; foot thick, and situate posteriorly; shells gaping when closed.

#### FAMILY VIII.—MYARIA.

Shells with a broad, spoon-like tooth in one or both valves; gaping at both extremities; in most instances with an external ligament and internal cartilage.

#### GENUS 37.—THRACIA.—Leach.

Shell very thin, transverse, inequivalve, inequilateral, one valve usually more convex than the other; umbones generally obtuse, and subcentral; hinge with a broad, transverse, frequently thickened tooth in both valves, and an obliquely triangular pit in the centre, in which the cartilage is situate; surface covered with a very thin epidermis; two well-marked, but dissimilar muscular impressions in both valves; pallial impression interrupted by an arcuated sinus, at the posterior side, which is truncated.

##### 1. THRACIA DECLIVIS, pl. XLIV, f. 5.

*Anatina declivis*, First Ed., pl. 11, f. 5; *Anatina pubescens*, Turton, Biv., p. 45, pl. 4, f. 1, 2; *Thracia declivis*, Leach, MSS., p. 5; *Mya pubescens*, Montagu, p. 40; Donovan, II, pl. 82; *Amphidesma convexum*, Fleming, p. 431.

Shell thin, brittle, transversely oblong-ovate; umbones large, very obtuse, and not quite central, that of the larger valve with a hiatus for the reception of the beak of the other valve, and to permit the opening of the shell; posterior side rounded;

anterior side truncated, with a shallow, oblique furrow running near to the hinge line, most deeply defined in the convex valve; basal line nearly parallel; surface of a sand-colour, strongly wrinkled, and slightly and irregularly striated concentrically; when viewed through a lens presenting the appearance of shagreen, and feels very rough to the touch; behind the cartilage side one valve turns upwards, and embraces the edges of that opposite; hinge with one broad, very strong, thickened, complicated, bipartite, horizontal, tooth-like plate in each valve, to which the cartilage is attached, that of the convex valve sunk below the level of the hinge line, and in the flat valve almost entirely exposed above it; inside white, and glossy.

Found on the Devonshire coast of a large size, but is a very local species.

2. *THRACIA CONVEXA*, pl. XLIV, f. 3.

*Anatina convexa*, First Ed., pl. 11, f. 3; Turton, Biv., p. 44, pl. 4, f. 1, 2; *Mya convexa*, Wood, Gen. Conch., p. 92, pl. 18, f. 1; Brown, Ency. Brit., 6th Ed., VI, p. 404; *Thracia convexa*, Leach, MSS., p. 5; *Amphidesma convexum*, Fleming, p. 431.

Shell subtriangular, very convex, and extremely brittle; umbones obtuse, placed nearly central, a little inflected, and almost touching each other; sides rapidly descending, the posterior one rounded, anterior one truncated; the truncation bounded by an elevated ridge, which takes its rise from the beaks, and terminates on the basal margin, which is a little arcuated; surface of a sand-colour, concentrically wrinkled, obsolete and irregularly striated, and very indistinctly granulated; dentary plate obliquely elevated, narrow, with several longitudinal furrows for the reception of the cartilage; inside smooth, white, or pale reddish-brown.

In the adult shell the umbones are so very contiguous, that they only permit the valves to open to a small extent, not more than half an inch.

Found on the Devonshire and Welsh coasts, and also in Ireland; and odd valves are frequently met with at Cramond Island, Frith of Forth; Turton mentions Paington Sands. It is an extremely local species.

3. *THRACIA PUBESCENS*, pl. XLIV, f. 6.

*Anatina villosiuscula*, First Ed., pl. 11, f. 6; Macgillivray, Phil. Journ., 1827, pl. 1, f. 10, 11; *Anatina declivis*, Turton, Biv., p. 47; *Mya declivis*, Montagu, pl. 1, f. 2; *Amphidesma declive*, Fleming, p. 432.

Shell transversely oblong-ovate, compressed, thin; umbones placed to one side; posterior side much rounded; anterior side contracted, and truncated; an elevated ridge emanates from below the umbones, and terminates at the base of the truncation; one central, flat, transverse tooth in each valve; external surface with a fine pubescent appearance, when viewed through a strong lens.

Found in Dublin Bay, the Dorsetshire coast, and Frith of Forth.

4. *THRACIA OVATA*, pl. XLIV, f. 4.

*Anatina ovalis*, First Ed., pl. 11, f. 4.

Shell transversely ovate, subtriangular; umbones nearly central, very obtuse, and not inflected; sides almost equally round, but very slightly truncated on the anterior one; hinge with a narrow, transverse tooth; surface a little shagreened, which,

however, can only be seen by the aid of a strong lens; colour pale yellowish-white; inside white.

I found this shell at Color Cots sands, Northumberland. It may be merely an accidental variety of *T. declivis*.

5. *THRACIA DISTORTA*, pl. XLIV, f. 7.

*Anatina distorta*, First Ed., pl. 11, f. 7; Turton, Biv., p. 48, pl. 4, f. 5; *Mya distorta*, Montagu, p. 42, pl. 1, f. 1; *Amphidesma distortum*, Fleming, p. 432.

Shell rather convex, transversely subovate, thin, fragile, rugose, and distorted, particularly towards the base of the valves; umbones straight, placed considerably to one side; shorter side well rounded, the other considerably acuminate; hinge with a broad, triangular, slightly hollow tooth in both valves; inside white.

Found at Plymouth, South Devon, and at several places on the Irish coast.

6. *THRACIA TRUNCATA*, pl. XLII, f. 28.

*Anatina truncata*, Turton, Biv., p. 46, pl. 4, f. 6.

Shell convex, cuneiform, subquadrangular; anterior side descending in an acute angle from the umbones, which are situate near to that side; posterior side long, with the superior or hinge line very flat, and abruptly truncated; basal margin nearly parallel; surface pale yellowish-brown, transversely striate; teeth projecting somewhat obliquely inwards.

Found in the interior of rocks at Torbay.

7. *THRACIA BREVIROSTRA*, pl. XLIV, f. 11, 12, 13, 14.

*Anatina brevirostra*, Brown, Edin. Journ. Nat. and Geo. Science, I, p. 11, pl. 1, f. 1, 2, 3, 4; *Næra brevirostra*, Gray.

Shell very convex, transversely oblong-ovate; posterior side rounded; anterior side abruptly tapering to an acuminate, abbreviated beak; umbones small, pointed, and slightly inflected towards the anterior side; exterior surface covered with a rich fawn-coloured epidermis, with a slight metallic lustre, beneath which the shell is provided with nearly obsolete, transverse striæ; hinge with one large, elevated, recurved, cardinal tooth in the right valve, which fits under the edge of the superior margin in the left; cartilage fixed in central pits beneath the umbones; inside pale purple, darker towards the extremities; margins plain. Length three-eighths of an inch; breadth upwards of half an inch.

This interesting species was discovered in the Frith of Forth, by James Gerard, Esq.; and I afterwards met with it near Port Seaton. It is also said to have been found on the Northumberland coast.

GENUS 38.—LEPTON.—Turton.

Shell compressed, transversely elongated, or nearly orbicular, equi- or slightly inequilateral, gaping a little at the sides; umbones nearly central, and very slightly inflected; hinge of one valve with a central, erect, primary tooth, situate between two hollows, from both sides of the hinge emanate a nearly straight, transverse rib, lying a little way within the margin, upon each of which rests a small tooth-like process, not very remote from the hinge, the rib on one of the sides is furnished with a small, internal, oblique, spoon-shaped cavity; the other valve is destitute of primary teeth, but with a large, central, triangular hiatus for the reception of the tooth of the opposite valve; on each side of which are lateral teeth, cleft their whole

length, forming acute angles, their origin close to the cardinal hiatus, with the inner limb continued by a rib similar to that on the opposite valve.

1. LEPTON SQUAMOSUM, pl. XL, f. 7.

*Psammobia punctura*, First Ed., pl. 16, f. 7; *Lepton squamosum*, Turton, Biv., p. 62, pl. 6, f. 1, 2, 3; Fleming, p. 429; *Solen squamosus*, Montagu, p. 565; Maton and Rackett, p. 48.

Shell compressed, a little transversely elongated; both sides equally rounded; pellucid, thin, and white; whole surface covered with minute and thickly studded punctures, having much the appearance of shagreen when viewed through a strong lens; inside smooth, glossy, white, with obscure, longitudinal, radiating striæ, diverging from the hinge. Length four-tenths of an inch; breadth half an inch.

First met with in sand from Salcomb Bay; Turton mentions Torbay; and Mr. Lyons found it at Tenby.

2. LEPTON NITIDUM.

*Lepton nitidum*, Turton, Biv., p. 63.

"Shell glossy, slightly striate transversely.

"Shell half the size of the last, which it resembles in shape and hinge, but is of a lucid, pale, glossy horn-colour, without punctures.

"From corallines, in Torbay."—Turton.

GENUS 39.—MAGDALA.—Leach.

Shell generally thin, transverse, inequivalve, inequilateral, gaping at the anterior side; hinge with a transverse, heart-shaped, unattached plate-like tooth, to which both valves are united by a small cavity on which this laminar plate is seated, and fixed by a ligamentary process; destitute of lateral teeth; ligament internal.

1. MAGDALA STRIATA, pl. XLIV, f. 1, 2, and 10.

*Magdala striata*, First Ed., pl. 11, f. 1, 2, and 10; *Mya Norwegica*, Wood, Cat., p. 11; Fleming, p. 463; *Mya pellucida*, Brown, Wernerian Mem., II, p. 504, pl. 24, f. 1; *Lyonsia striata*, Turton, Biv., p. 35, pl. 3, f. 6, 7.

Shell thin, subpellucid, transversely oblong; hinge line nearly parallel; anterior side shortest, and well rounded; posterior side truncated, gaping, and with the edges reflected; from the base of the truncation the shell abruptly obliques, until it reaches the basal line; umbones not quite central, very obtuse, and straight; surface covered with a thin, olivaceous epidermis, with pretty strong, concentric wrinkles, which are more strongly developed at the sides, especially the truncated one, where they are rugose and sharp; beneath the epidermis the shell is thickly beset with fine, longitudinal, slightly waved striæ, which is less strong towards the disks of the valves; inside of a rich pearly hue, exhibiting iridescent reflections. Length about five-eighths of an inch; breadth an inch and a quarter.

First discovered by Miss Hutchins, in Bantry Bay, Ireland, has since been found at Warren Point; at Tenby, Wales; and the Western coasts of England.

GENUS 40.—MYATELLA.—Brown.

Shell thin, transversely oblong-ovate, inequilateral; hinge line nearly parallel, truncated at one side; hinge with a large, single, erect, spear-shaped tooth in one valve, resting upon a corresponding cavity in the cardinal region of the other valve; margins smooth and even.

1. MYATELLA MONTAGUI, pl. XL, f. 26, 27.

*Hiatella striata*, First Ed., pl. 16, f. 26, 27; *Myatella striata*, Brown, Conch. Text Book, p. 142, pl. 16, f. 12 and 30; *Mya striata*, Montagu, Linn. Trans., XI, p. 188, pl. 13, f. 1 A; *Lyonsia striata*, Turton, Biv., p. 35.

Shell transversely elongated, thin, semitransparent; umbones short, obtuse, and situated nearest the posterior or truncated side, which is shortest; anterior side rounded; whole surface covered with a very thin, olivaceous epidermis, beneath which the shell is finely striated longitudinally, and is of a pearly hue; inside smooth, pearly, and exhibiting nacreous reflections. Length half an inch; breadth an inch.

Discovered in Tenby-bay, by Mr. George Lyons.

It is not without considerable hesitation that I have instituted this genus, but I think it impossible that so accurate an observer as Montagu could describe the tooth of this shell as fixed, if it had not been so. Our figures are copied from his. Dr. Fleming says he followed Turton in bringing together the synonyms, but with considerable hesitation.

GENUS 41.—MYA.—Linnæus.

Shell transverse, nearly equivalve, gaping at both extremities, but widest at the posterior side; one valve with a large, compressed, dilated, hollow, spoon-shaped, perpendicular, vertically projecting tooth; the opposite valve destitute of teeth; the cartilage placed in a narrow suture; two lateral, distant, large, muscular impressions, the anterior one narrow, and the posterior almost orbicular; pallial impression with a large sinus; ligament internal, large, and fixed in the cavity of the tooth in one valve, and to a large subumbonal cicatrix in the other.

1. MYA ARENARIA, pl. XLV, f. 1.

*Mya arenaria*, First Ed., pl. 10, f. 1; Montagu, p. 30; Donovan, II, pl. 85; Lamarck, V, p. 461; Turton, Biv., p. 32; Fleming, p. 463.

Shell strong, transversely oblong-oval, and moderately convex; umbones rather large, prominent, nearly central, and not incurved; one side more ample and rounded than the other, which is somewhat acuminate, and pointed at the extremity; external surface generally with concentric wrinkles and irregular striæ, mostly of a brownish sand-colour, but differing considerably from various localities, as well as from the age of the shell; one valve with a broad, thick, perpendicular tooth, provided with a large spoon-like cavity for the reception of the cartilage, and another smaller one by its side; opposite valve destitute of teeth; inside glossy, white.

Inhabits many of the British and Irish coasts, particularly at the mouths of rivers.

2. MYA TRUNCATA, pl. XLV, f. 2.

*Mya truncata*, First Ed., pl. 10, f. 2; Montagu, p. 32; Donovan, III, pl. 92; Maton and Rackett, p. 35; Turton, Biv., p. 31; Forbes, p. 54.

Shell strong, convex, subovate; umbones subcentral, or situate nearest the greatly truncated and shorter side, and which gapes widely; anterior side well rounded; hinge line nearly parallel; basal line hollow; external surface with numerous, concentric wrinkles, covered with a yellowish-brown or drab-coloured epidermis, extending upwards of half an inch beyond the open end, in which situation the sides of the valves are a little reflected; hinge with a broad, erect, strong, complicated tooth, with a spoon-like triangular cavity for the reception of the cartilage, and several folds on the side; inside smooth, white.

A common shell on almost all the coasts of Britain and Ireland; it lurks in sand to the depth of three or four inches.

#### FAMILY IX.—SOLENIDES.

Shells transversely elongated, destitute of accessory pieces, gaping at the lateral extremities; ligament external.

##### GENUS 42.—PANOPÆA.—Mœnard.

Equivalve, oval, inequilateral, gaping unequally at both extremities; hinge with an acute, primary tooth in each valve, and a large callosity near the umbones, supporting the ligament; two distant, oval, muscular impressions; pallial impression with a large sinus; ligament large, external, adhering to an ample, prominent fulcrum.

##### 1. PANOPÆA GLYCIMERIS, pl. XLVI, f. 1.

*Panopæa Glycimeris*, First Ed., pl. 10,\* f. 1; *Mya Glycimeris*, Donovan, IV, pl. 142; Maton and Rackett, p. 34; Montagu, Sup., p. 19.

Shell transversely elongated, very thick, and undulous; with transverse wrinkles, and gaping widely at both extremities; umbones large, elevated, obtuse, and nearly straight; general colour of a cinereous or ochraceous hue; hinge with a large, very thick, primary tooth, and a smaller one beside it, with several transverse folds.

First discovered between the Dogger Bank and Eastern coast of England; Turton gives as a locality Teignmouth; and Mr. Bean, of Scarborough, obtained one alive by dredging, off the coast of Scarborough, and also a dead specimen.

##### GENUS 43.—SOLENI.—Linnæus.

Shell equivalve, transversely elongated, subcylindrical, prodigiously inequilateral; umbones nearly terminal, situate close to the anterior side, and gaping widely at both extremities; truncated, or subtruncated, sometimes rounded; hinge linear, with several small cardinal teeth, various in form, often acute and recurved; lateral teeth somewhat elongated and crooked; muscular impressions distant, tongue-shaped, the anterior one joined a little behind the umbones; the posterior one irregular and suboval; pallial impression elongated, straight and bifurcated behind; ligament long and exterior; external surface covered with a thick, horny epidermis.

##### 1. SOLEN SILIQUA, pl. XLVII, f. 3, 3.

*Solen Siliqua*, First Ed., pl. 13, f. 3; Montagu, p. 46; Donovan, II, pl. 46; Turton, Biv., p. 80, pl. 6, f. 5; Fleming, p. 459; Forbes, p. 55.

Shell subcylindrical, straight, greatly inequilateral, obliquely truncated, and open at both sides; hinge situate at one side, near the extremity, with a single, thin, compressed, upright tooth in one valve, and an elongated, remote, lateral lamina; the other valve with two teeth, a primary and a lateral inclined one, corresponding with the lateral lamina; surface covered with an olivaceous-brown, strong epidermis, excepting on the greatly lengthened, diagonal, triangular area, which takes its rise at the umbones, and terminates on the opposite side, on this space the epidermis is thinner, and frequently of a lilac hue; beneath the epidermis the shell is cinereous, and streaked with pale lilac or white; the lower area is striated transversely, with distinct lines of growth, both of which suddenly cross the area longitudinally, and define the divisions on the surface; inside dull white, frequently tinged with purple. Varying from an inch to an inch and a quarter in length; and from seven to eight inches in breadth. I found a specimen at Holy Island measuring twelve inches.

Inhabits most of the shores of Britain and Ireland, near low water-mark, burrowing to the depth of a foot in the sand, which it penetrates with astonishing rapidity.

##### 2. SOLEN VAGINA, pl. XLVII, f. 2, 2.

*Solen Vagina*, First Ed., pl. 13, f. 2; Montagu, p. 48 and 565; Ib., Sup., p. 25; Turton, Biv., p. 79, pl. 6, f. 4; Fleming, p. 458; *Solen marginatus*, Donovan, IV, pl. 110.

Shell straight, nearly cylindrical, truncated at both ends, that next the hinge somewhat oblique, reflected, and provided with a pretty deep, longitudinal furrow, emanating from the exterior side of the umbones, widening as it descends, and terminating on the margin; a lateral, triangular area takes its rise on the superior or hinge line, at the umbones, and terminates on the posterior side, occupying about half the area of the shell, and dividing it, as it were, into two lengthened triangles; whole surface covered with rather close, irregular striæ, these run horizontally on the lower area, and at their junction with the superior area, turn suddenly perpendicularly, and being reflected near the hinge line, terminate on the margin; a fine, rather thin, drab-coloured epidermis invests the entire shell, which, however, is frequently of an orange or ferruginous-colour near the umbones, extending considerably beyond the basal margin, and posterior side; umbones situate close to the anterior side; hinge with a single, compressed, elevated tooth in each valve, which lie close to each other when the valves are shut; destitute of lateral teeth; a large, lateral, and thickened lamina takes its rise from the base of the cardinal teeth in both valves, these are acute at both extremities; inside smooth, glossy, and of a purplish-white tinge. Ordinary length about three-quarters of an inch; breadth about four inches: although it frequently considerably exceeds that size.

This is a very local species, and has been found near Laughare, Caermarthenshire; Red Wharf, Anglesey; Weymouth; and is frequently met with in Dublin Bay, Portmarnock, Balbriggan, and Western coasts, Ireland.

##### 3. SOLEN LIGULA, pl. XLVII, f. 2.\*

*Solen Ligula*, Turton, Biv., p. 81, pl. 6, f. 6.

"Shell straight, in one valve a single, compressed, obtuse, slightly cloven tooth, and two in the other."—*Turton*.



Turton says that this shell in every respect resembles *Solen Siliqua*, except in the teeth; in the *S. Ligula* the single tooth is compressed, rounded, obtuse at the top, and slightly cleft.

Turton found it plentiful in the sands at Tor Abbey, where at low water-mark it may easily be obtained alive.

4. *SOLENS ENNIS*, pl. XLVII, f. 10, 10.

*Solen Ensis*, First Ed., pl. 13, f. 10; Montagu, p. 48; Donovan, II, pl. 50; Turton, Biv., p. 82; Fleming, p. 458; Forbes, p. 56.

Shell considerably arcuated, subcylindrical, truncated at both extremities; the anterior side oblique; a triangular area takes its rise close to the umbonal region, and terminates on the opposite side; striated and coloured like *S. Siliqua*; hinge with a single, lateral, cardinal tooth in one valve, locking between two teeth in the opposite valve, which is provided with a strong, elevated, slightly recurved, cleft, lateral tooth for the reception of the opposite simple one; strong, elevated, lateral lamina, with a rounded termination, in both valves, take their rise close to the base of the cardinal teeth, extending to nearly a fourth of the breadth of the shell; inside bluish-white. General length three-quarters of an inch; breadth about five inches: but specimens of much greater dimensions have been found in Ireland and the Orkney Islands.

Not uncommon on many of the sandy shores of Britain and Ireland.

5. *SOLENS PELLUCIDUS*, pl. XLVII, f. 4.

*Solen pygmaeus*, First Ed., pl. 13, f. 4; Lamarck, V, p. 452; *Solen pellucidus*, Montagu, p. 49; Donovan, V, pl. 153; Turton, Biv., p. 83; Fleming, p. 459.

Shell slightly arcuated, compressed, fragile, subpellucid; rounded at both extremities; covered with a very thin, yellowish-green epidermis, beneath which the surface is usually of a very pale flesh-colour; umbones situate near to one side; hinge with a single, small tooth in one valve, locking between two in the opposite one; each valve provided with lateral teeth; inside white. Length a quarter of an inch; breadth somewhat more than an inch.

A local species, found at Sandwich, Cornwall; Red Wharf, Anglesey; Torbay, Devonshire; Portmarnock, Ireland; Portobello and Musselburgh, Scotland.

GENUS 44.—*SOLENOCURTUS*.—De Blainville.

Shell transverse, elongated, equivalve, subequilateral; the hinge and basal lines nearly parallel; extremities truncated, or rounded, and gaping; umbones hardly developed and subcentral; surface invested by a very thin epidermis; hinge with or without three rudimentary, cardinal teeth, and a prominent bar reaching nearly half across the valves; ligament prominent, seated upon thick callosities; two distant, rounded, muscular impressions in each valve, one situate towards the broader side, the other subcentral; pallial impression straight, with a sinus at the broader end.

1. *SOLENOCURTUS LEGUMEN*, pl. XLVII, f. 8, 9, 9.\*

*Solen Legumen*, First Ed., pl. 13, f. 8, 9; Pennant, IV, p. 84, pl. 46, f. 24; Montagu, p. 50; Donovan, II, pl. 53; Lamarck, V, p. 453; *Pharus Legumen*, Leach, MSS., p. 6; Fleming, p. 459; *Psammobia Legumen*, Turton, Biv., p. 90.

2 F

Shell greatly elongated transversely, thin, and subpellucid; umbones subcentral, hardly perceptible; surface smooth, with fine, irregular, shallow, concentric striæ; covered with a very thin, yellowish fawn-coloured epidermis, which is frequently decorticated towards the hinge and on the superior portions of the shell; shorter side broad, and gently tapering towards the opposite extremity, where the valves are more acute, and slightly subtruncated; hinge with two small, erect, recurved, cardinal teeth in one valve, between which an erect, thin tooth in the opposite valve is locked; in both valves is a parallel, arcuated, hook-like side tooth, continued by a pretty long, laminar process, or lateral tooth, on which the ligament is seated; on the opposite side is a lengthened, strong ridge, reaching from the cardinal teeth nearly to the side of the valves; inside white, or pale flesh-colour, and glossy. General length at hinge nearly seven-eighths of an inch; breadth four inches: but sometimes found considerably larger.

A local species, found on the north coast of Devonshire, Hampshire, Caermarthenshire, Swansea, of a superior size on many of the Irish coasts, and is plentiful on the east coast, from Cork to Belfast.

GENUS 45.—*AZOR*.—Leach.

Shell transversely oblong; umbones blunt, and situated nearly central; gaping at both sides; hinge with one erect, elevated, recurved tooth in one valve, which fits between two erect, recurved teeth in the opposite one, all of which project considerably above the commissure, or hinge line of the valves; cartilage external; two large muscular impressions in both valves; pallial impression interrupted by an extremely large, ascending, tongue-shaped sinus, which extends nearly to the umbones.

1. *AZOR ANTIQUATUS*, pl. XLVII, f. 6, 7.

*Solen antiquatus*, First Ed., pl. 13, f. 6, 7; Lamarck, V, p. 454; Maton and Rackett, p. 46; Donovan, IV, pl. 114; Montagu, p. 52; Donovan, IV, pl. 114; *Azor antiquatus*, Leach, MSS., p. 6; *Psammobia antiquata*, Fleming, p. 460; Turton, p. 91; *Solen antiquatus*, *Solen cultellus*, Pennant, IV, p. 85, pl. 46, f. 25.

Shell transversely oblong-ovate, thin; umbones straight, placed nearly central; sides rounded, and gaping; colour white; covered with a moderately strong, yellowish-brown epidermis, beneath which the surface is covered with fine, somewhat irregular, concentric striæ; hinge with a single, elevated, erect, curved, reflected tooth in one valve, which locks between two reflected teeth in the opposite one; inside smooth, glossy, white, or bluish-white; margin plain.

Found on the coasts of Cornwall, Dorset, Hampshire; and Dublin Bay and Portmarnock, Ireland.

FAMILY X.—*PHOLADARIA*.

Valves provided with accessory pieces; or gaping considerably anteriorly.

GENUS 46.—*GALEOMMA*.—Turton.

Shell thin, generally oval, equivalve, equilateral; ventral, or basal margin gaping widely; a single, small, cardinal tooth in each valve; two lateral, indistinct, somewhat approximate, mus-

cular impressions, extending nearly all along the arch of the cardinal margin; pallial impression interrupted, but destitute of a sinus; ligament external, linear, expanded over the outer surface of the cardinal facets; cartilage situate in a small, short, triangular pit, immediately under the umbones, which are slightly prominent.

1. *GALEOMMA TURTONI*, pl. XXIII, f. 15, 16.

*Galeomma Turtoni*, First Ed., pl. 31, f. 15, 16; Turton, Zool. Journ., II, p. 361, pl. 13, f. 1.

Shell tumid in the middle, compressed towards the extremities, which are rounded and closed; with a large oval gap at the basal margin; hinge destitute of teeth; of a dirty or cream-white colour; surface covered with close-set, irregular, transverse, interrupted opaque lines; umbones prominent. Length two lines and a half; breadth not quite half an inch.

Dredged in the English Channel, by Dr. Turton.

GENUS 47.—*PHOLAS*.—Linnæus.

Shell transversely oblong, equivalve, greatly inequilateral; nearly the whole species gaping at both ends, and most of them with the opening very large at the anterior end, and extending along the basal margin; in some species, however, it is nearly closed by a testaceous, almost smooth, somewhat tubular prolongation of the valves; hinge in various species with an unequally sized, small, recurved tooth in each valve; external surface generally roughened with muricated striæ, presenting a rasp or file-like appearance; most of the species provided with a greater or lesser number of accessory valves, situate near the fulcrum of the hinge, and connected with the shell only by the epidermis, which passes over them; each valve furnished with a long, curved, flat, tooth-like, testaceous process, projecting from the interior of the shell, immediately within the umbones; in some species this is expanded, and spoon-shaped; anterior dorsal margin near the beaks reflected, close, and flattened down upon the umbones in some species, and in others a second margin is produced, situate remote from the first, with the intervening space divided by a series of transverse septa; two principal impressions, formed by the adductor muscle, one of which is placed on the reflected margin over the beaks, and the other intermediate, between the umbones and the posterior side; muscular impression with a large sinus in its narrower part, the impression being somewhat expanded near to the sinus.

*Section I.—Valves divided by a longitudinal groove.*

1. *PHOLAS CRISPATA*, pl. XLVIII, f. 1, 2, 3, 4, 5.

*Pholas crispata*, First Ed., pl. 9, f. 1, 2, 3, 4, 5; Montagu, p. 23; Donovan, II, pl. 62; Ib., *Pholas parvus*, young shell, pl. 69; Turton, Biv., p. 6; Fleming, p. 456; Forbes, p. 57.

Shell strong, inflated, transversely suboval, very open at both sides; one side rounded; the anterior one acutely beaked, at which side the superior margins, from the umbonal region to the extremity, are thickened, smooth, and reflected, with a hollow behind; from the internal end of such reflection emanates a longitudinal, rather deep furrow,—varying in width in different individuals,—and terminating on the basal margin; posterior side nearly plain, with irregular, transverse, slight wrinkles; anterior side with numerous, thin, undulating, concentric wrinkles, and longitudinal, divergent grooves, producing

a reticulated appearance; inside smooth, white, and glossy, with an elevated, longitudinal ridge, corresponding to the external furrow; below the umbonal region in both valves is a long, flat, greatly curved, transverse tooth; external surface of a dull, opaque yellowish-white, sometimes of a ferruginous hue.

Found on many of the British and Irish coasts, burrowing in limestone or clay, its retreat being marked by a circular hole on the surface.

2. *PHOLAS PAPYRACEA*, pl. XLIX, f. 4, 6, 7, 9.

*Pholas papyracea*, First Ed., pl. 8, f. 4, 6, 7, 9; Goodall, MSS.; Turton, Biv., p. 2, pl. 1, f. 1, 2, 3, 4; *Pholas lamellata*, Fleming, p. 456; *Pholadidea Loscombiana*, Fleming, Conch. Dict., p. 147.

Shell semiclavate; anterior side ventricose, and very obtuse, somewhat rounded, and closed when the valves are shut, and quite smooth for about half of its surface; open and truncate at the posterior and smaller side, which is provided with a produced accessorial ring, of a brownish papyraceous appearance, and extending about three-eighths of an inch beyond the truncated termination, its diameter increasing outwardly; the hinder half covered with close-set, slightly oblique, crenate ribs; near the centre of each valve is a somewhat oblique, longitudinal groove, beyond which they are covered with coarser and more parallel striæ; inside dull white, with a longitudinal rib corresponding with the external groove; teeth rather short, and compressed; on the margin above there is an erect, slightly triangular, somewhat concave plate, much larger in one valve, and containing a portion of the animal fold, but destitute of a permanent ligament. Length three-quarters of an inch; breadth eleven inches and three-quarters, including the annular appendage.

This ring is divisible into two equal and similar parts, the segments being united by a thin elastic membrane; the back is provided with two accessorial appendages, with the margins of the valves reflected at their anterior side, so as to form a double obtuse keel, reaching as far as the longitudinal groove, near the end of which is a kind of elevated joint, where the accessorial valves are attached.

3. *PHOLAS LAMELLATA*, pl. XLIX, f. 10, 11.

*Pholas lamellata*, Turton, Biv., p. 4, pl. 1, f. 5, 6.

Shell very open anteriorly, where the valves are depressed, slightly reflected, and produced into a beaked termination, the margins of both valves on this side being strongly serrated, and nearly closed posteriorly; with an erect, laminar process on the superior margin, over the umbonal region; valves with a nearly central, longitudinal groove, emanating from the umbones, and terminating on the base; whole surface covered with close-set, somewhat obliquely transverse, crenate ribs, which become coarser and straighter beyond the longitudinal groove; inside white, and smooth, with a longitudinal rib in the middle, corresponding to the external groove; teeth long, compressed, and slender, with a triangular process above them; destitute of accessorial valves.

This species is nearly allied to, if not a variety of the preceding shell. It was introduced by Dr. Turton, who remarks, "It has been suggested to us, that a belief is entertained of this being the young of *P. papyracea*. But as we have opportunities of examining each of them in every stage of their growth, both perfect and with the valves separated, we can with

confidence assert that no two species of the same genus are more dissimilar and distinct in their essential characters. Independently of the total want of the ring, and the large frontal gape, the smaller end is rounded, and not as in the last species truncate, and it has no accessorial valves. In addition, also, to the other marks of discrimination, it may be observed, that the valves of the *Pholas papyracea* are closed in front by a fine elastic membrane, in the middle of which, near the base or rounded extremity, is a small orifice or spiracle, which can be closed at pleasure, and through which water is often ejected."

4. PHOLAS SULCATA, pl. XLVIII, f. 17, 18.

*Pholas sulcata*, First Ed., pl. 9, f. 17, 18.

Shell transversely oblong-ovate; hinge line nearly parallel; almost equally rounded at both extremities; a thickening and slight flexure on the superior margin, extending to the anterior side; from the umbonal region emanate two obliquely longitudinal, narrow furrows, and terminate on the basal margin, at which point the shell is longest; anterior to the sulci, the surface is covered with close-set, waved, transverse striæ; and the posterior side with irregular, broken, concentric striæ; external surface of a yellowish or pale brown hue; inside smooth, white, a curved, flattened, tooth-like process under the umbones, a small denticle at the central point of the umbonal region, and an oblique, longitudinal rib, corresponding to the external furrows.

This shell was found at Dunbar, and is in the collection of David Falconer, Esq., of Carlowrie.

5. PHOLAS TUBERCULATA, pl. XLIX, f. 12, 13.

*Pholas tuberculata*, Turton, Biv., p. 5, pl. 1, f. 7, 8.

Shell transversely oblong-ovate; umbonal region nearly central, provided with a single, oblong, accessorial valve, which is truncate at one end, and reaches to the anterior termination, where the valves meet; the gape or opening nearly circular; from the umbones a deep furrow emanates, and terminates on the base; anterior half of the valves considerably longer than the other, being abruptly lengthened from the mesial furrow; the superior side abruptly descending, terminating in a blunt beak, the lower side of which is acutely hollowed, producing a strongly arcuated basal line, in this half of the valves, which is covered with close-set, oblique, undulating striæ; these are lying nearly parallel on the other half of the valves, and gradually become obsolete towards the superior edge of them; this side is rounded, and nearly closed; inside white, smooth, with a large, rough, wrinkled tubercle, situate on the margin above the teeth, and a longitudinal rib, corresponding to the external groove.

The longitudinal external furrow will at once distinguish this from *P. parva*.

Found at Torbay, but is a rare species.

Section II.—Valves destitute of a longitudinal furrow.

6. PHOLAS DACTYLUS, pl. XLIX, f. 1, 2, 3.

*Pholas dactylus*, First Ed., pl. 8, f. 1, 2, 3; Pennant, IV, p. 76, pl. 39, f. 10; Montagu, p. 20 and 558; Donovan, IV, pl. 118; Turton, Biv., p. 8; Fleming, p. 457.

Shell greatly elongated transversely; umbonal region placed considerably to one side, reflexed with a series of cells on the external side, and covered with two concentrically striated valves, which are connected longitudinally; on the posterior

side of these is placed a long, spatuliform, plate-like, accessorial valve, affixed by the connecting membrane; anterior side of the valves with rough, transverse, spinous striæ, terminating in a rounded beak, with a large gape at that side; posterior side smooth, marked with lines of growth, and terminating obtusely; external surface of an ochre-colour, but varying according to the colour of the substance in which it locates; inside smooth, white; below the umbones, a large, flat, curved tooth.

Found on many of the British and Irish coasts, burrowing in hard clay, marl, and the stumps of old trees.

This species is sometimes found two inches in length, and seven in breadth.

7. PHOLAS CANDIDA, pl. XLVIII, f. 6, 7, 8, 9, 10.

*Pholas candida*, First Ed., pl. 9, f. 6, 7, 8, 9, 10; *Pholas candidus*, Pennant, IV, p. 76; Montagu, p. 24; Donovan, IV, pl. 132; Fleming, p. 457; Turton, Biv., p. 10.

Shell thin, fragile, semipellucid, transversely elongated, and white, slightly inclining to yellow, but snow-white in other specimens; both sides rounded at their extremities; umbonal region covered by an elongated, accessory plate, rounded at the posterior side, and acute at the other extremity, with a hollow groove in its centre, and obliquely striated on both sides; umbones placed near the anterior side, which is very short; the other side long; surface covered with wide-set, longitudinal, and transverse striæ, prickly at the anterior side; hinge reflected, and provided with a small, transverse, slightly bent denticle in one valve; inside smooth, glossy, white, with a slender, arcuated, tooth-like process in both valves, under the umbones.

Inhabits limestone rocks and hard clay, on many of the coasts of Britain and Ireland.

8. PHOLAS PARVA, pl. XLVIII, f. 11, 12.

*Pholas parva*, First Ed., pl. 9, f. 11, 12; *Pholas parvus*, Pennant, IV, p. 77, pl. 40, f. 13; Montagu, p. 22, pl. 1, f. 7, 8; Turton, Biv., p. 9; Fleming, p. 457.

Shell rather strong, transversely oblong-ovate; rough, and pale yellowish-brown externally; anterior side narrowed into a produced, somewhat curved beak, its superior margin reflexed, and very open at the extremity; umbones not quite central, and covered by an elongated, spear-shaped, accessory process, which is rounded at the posterior side, and slightly hollowed in the centre, with arrow-shaped striæ; margin of the umbo provided with a round, smooth tubercle; external surface, at the anterior side, longitudinally and transversely striated, but smooth on the opposite extremity; inside smooth, white.

This is a very local species, but is found plentifully at Torbay. I found one specimen on the beach at St. Cyrus, Kincardineshire.

9. PHOLAS STRIATA, pl. XLIX, f. 5, 8.

*Pholas striata*, First Ed., pl. 8, f. 5, 8; Montagu, p. 26; Donovan, IV, pl. 117; Turton, Biv., p. 11; *Pholas conoides*, Fleming, p. 457.

Shell transversely conoid; the anterior side broad, very open, covered by two shield-shaped, accessory plates, and strongly arcuated, with echinated striæ, separated from the smooth part by a faint depressed line, and terminating in a sharp beak; the posterior side irregularly striated transversely; umbones placed much to one side, and covered by a large, heart-shaped, smooth, accessory process; by the side of which is a narrow,

lance-shaped, longitudinal plate, joined to the membrane by which the valves are connected, extending to nearly the posterior extremity; the basal margin is provided with an elongated, testaceous, accessory plate, which seems to prevent the valves from opening, except at the extremities; inside smooth, white, with a short, longitudinal, rounded rib, becoming more developed as it approaches the base, crossed by rough points. General length half an inch; breadth three-quarters.

Found on the Devonshire coast, burrowing in a piece of rotten wood, and Dr. Turton found it in an old yard-arm of a vessel drifted ashore at Brixham. The *Pholades* always perforate the wood across the grain, while the *Teredo navalis* penetrates the wood with the grain.

#### FAMILY XI.—TUBICOLARIA.

Shell contained in a testaceous sheath, distinct from its valves, incrustated entirely or in part in the wall of this tube, or projecting outwards.

#### GENUS 48.—TEREDO.—Linnæus.

Shell equivalve, inequilateral, and orbicular, with a subulate process in front, and gaping at both sides; anterior opening angular at the back, and the posterior one rounded in front; an elongated, curved, tooth-like process emanates from the inside, in both valves, protruding from the umbones; anterior muscular impression situate upon the subulate process; this shell is placed on the anterior extremity of a testaceous, accessory tube, which is secreted by the animal in its progress through wood, and forms a lining to the perforated cavity, becoming gradually wider as the animal advances, and is frequently furnished internally with vaulted septa; aperture of the tube round, and posteriorly divided into a double tube, which the animal has the power of closing by means of two palmate, sometimes pennated opercula.

##### 1. TEREDO NAVALIS, pl. L, f. 1, 1, 2, 3, 4, 5, 6, 7.

*Teredo navalis*, First Ed., pl. 3, f. 1; Montagu, p. 527; Ib., Sup., p. 7; Donovan, V, pl. 145; Turton, Biv., p. 14, pl. 2, f. 1, 2, 3; Fleming, p. 554.

Shell with the valves triangular, ear-shaped behind, and hemispherical when closed; one valve with a curved denticle on the margin at the umbonal region; surface of the valves striated in various directions, each with a triangular projection in front, inclining a little inwards, and conforming to the angular form of the valves, with a lengthened, flat, curved tooth, projecting inwards under the hinge, in the same manner as the *Pholades*; this bivalve is seated on the wider end of a thin, white, flexuous, brittle, nearly circular, and rather abruptly tapering tube, which is internally provided with transverse septæ, reaching half way across the tube; inside of the valves white; the supplemental valves seated on the inside of the tube, and near the smaller end are spatuliform, being convex externally, and concave internally; one end linear, elongated, and straight, the other truncated.

Fig. 1 *b* represents a section of the lower end of the tube, shewing the concamerated structure.

Fig. 2 is an entire tube, shewing the bivalve seated on its wider extremity *a*.

Fig. 3, 4, 5, different views of the bivalve.

Fig. 6, 7, different views of the spoon-shaped appendages, or opercules.

##### 2. TEREDO BIPENNATA.

*Teredo bipennata*, Turton, Biv., p. 15; Ib., Conch. Dict., p. 184, f. 38, 39, 40; Fleming, p. 454.

Shell with the valves ear-shaped behind, and the auricles reflected; an oblique rib on the margin, above the teeth; somewhat larger than the last; tube thicker, stronger, and destitute of the internal concamerated partitions; and instead of the spoon-shaped valves, provided with two very long, slender appendages, somewhat curved and feathered on each side.

Found in drifted timber at Exmouth.

##### 3. TEREDO NANA, pl. L, f. 14, 15.

*Teredo nana*, Turton, Biv., p. 16, pl. 2, f. 6, 7; Fleming, p. 455.

Shell with rounded valves, and destitute of auricles behind; a strong, conic, oblique tooth on the margin, at the umbo; valves destitute of a jointed, internal, longitudinal rib. Diameter not quite an eighth of an inch.

Found burrowing in a piece of wood at Torbay.

##### 4. TEREDO MALEOLUS, pl. L, f. 16.

*Teredo maleolus*, Turton, Biv., p. 255, pl. 2, f. 19; Fleming, p. 455.

Shell with ear-shaped valves behind, detached on their internal edge, with reflected auricles; accessorial valves mallet-shaped, and placed transversely; anterior triangular processes remotely striated, and few in number; tube consisting of a light calcareous deposit on the surface of the chamber, with its termination slightly semiconcamerated; accessorial valves terminal. Diameter a quarter of an inch.

Found in rotten wood at Torquay.

#### GENUS 49.—GASTROCHÆNA.—Spengler.

Shell equivalve, inequilateral, somewhat wedge-shaped; anterior side rounded, when viewed in front, posteriorly acuminate, and gaping widely, its aperture being subovate, and acute behind; hinge marginal and linear, destitute of teeth, but in their stead a small laminated appendage, emanating from the umbo, allied to the same tooth-like process in the genus *Pholas*; ligament external.

This shell is enclosed in a testaceous, irregular, claviform tube, situate at its broader extremity; it is open and attenuated anteriorly, with an oblong, bilobate aperture, which is nearly subdivided by a projecting septum that does not quite reach across the opening; these serve for the passage of the two tubes of the animal; the posterior end of the tube is closed. This club-shaped tube is found either within the perforated cavities of rocks, or in old shells or corals, the testaceous tube always protruding beyond the surface.

##### 1. GASTROCHÆNA PHOLADIA, pl. XLVIII, f. 13, 14.

*Gastrochæna modiolina*, First Ed., pl. 9, f. 13, 14; *Mya Pholadia*, Montagu, p. 28 and 559; Ib., Sup., p. 20; *Mya dubia*, Pennant, IV, p. 82, pl. 44, f. 19; Donovan, III, pl. 108; Turton, Biv., p. 18; *Gastrochæna hians*, Fleming, p. 458; *Gastrochæna cuneiformis*, Spengler, II, p. 179, f. 8, 9, 10, 11.



Shell thin, brittle, subopaque, transversely subovate, and wedge-shaped when the valves are united; broad and widely gaping at the anterior side, from whence it gradually decreases until it reaches the opposite extremity, where the valves are closely shut; anterior termination of the valves with a small but prominent, terminal beak; external surface covered with a brown or blackish-brown coating, irregularly wrinkled transversely; umbones rather prominent, and obtuse, situate near the larger side, at the junction of the valves on the superior margin; hinge with an obscure, laminar, transverse tooth in both valves. General length half an inch; breadth an inch.

Turton mentions a variety of about half the ordinary size, but not differing in other characters, which is found buried in the back of old oyster shells.

Inhabits rocks and stones at Torbay, and is an extremely local species.

#### GENUS 50.—XYLOPHAGA.—Sowerby.

Shell nearly orbicular, equivalve, inequilateral, gaping in front, the opening with an angular termination at the back; two small, somewhat triangular, calyxformed, accessory valves placed over the anterior side of the hinge, and a small tooth lying close to the umbo within each valve, besides an internal rib running from the beak to the basal margin, with a corresponding external depression; anterior muscular impression smallest, situate on the superior margin, close to the beak; posterior muscular impression large and obovate.

##### 1. XYLOPHAGA DORSALIS, pl. L, f. 8, 9, 10.

*Xylophaga dorsalis*, Turton, Biv., p. 16 and 253, pl. 2, f. 4, 5; Fleming, p. 455; *Teredo dorsalis*, Turton, Conch. Dict., p. 185.

Shell with rounded valves, but destitute of auricles, posteriorly closed, and provided with an internal rib; without a reflected, auriform process posteriorly; the termination plain, and rounded; one valve furnished with a raised, curved process, and a small, slightly cleft one in the other; inside with a jointed, longitudinal rib, corresponding to the external groove.

Found in a piece of wood, at Torbay, by Dr. Turton.

#### GENUS 51.—DENTALIUM.—Linnæus.

Shell tubular, open at both ends, arcuated, increasing in diameter towards the anterior extremity, where the aperture is large and round; opening of the pointed end very small, and with a lateral fissure in some species; external surface ribbed, striated, or smooth, but never with annulations.

##### 1. DENTALIUM ENTALIS, pl. LVI, f. 7.

*Dentalium entalis*, First Ed., pl. 1, f. 7; Pennant, IV, p. 145, pl. 90, f. 154; Montagu, p. 494; Donovan, pl. 48; Brown, Conch. Text Book, p. 52, pl. 9, f. 33.

Tube slightly arcuated, tapering, smooth, and glossy; frequently with inequidistant, circular, irregular wrinkles, or lines of growth; of a yellowish-white colour. Length an inch and a half; diameter at larger end two-tenths of an inch, smaller end about a twentieth of an inch.

Inhabits many of the British and Irish coasts.

##### 2. DENTALIUM DENTALIS, pl. LVI, f. 8.

*Dentalium dentalis*, First Ed., pl. 1, f. 8; Linnæus, Syst. Nat., p. 1263, No. 785; Maton and Rackett, p. 237; Montagu, p. 495.

Tube slender, subarcuated, very taper, terminating in a small point; surface with regular, close-set, longitudinal striæ; sometimes a few annulations can be traced at the wider end; colour white, but not glossy. Length half an inch; diameter at the base half a line.

Discovered by Colonel Montagu, at Falmouth and south coast of Devonshire, and is a very local species.

##### 3. DENTALIUM OCTANGULATUM, pl. LVI, f. 2.

*Dentalium striatum*, First Ed., pl. 1, f. 2; *Dentalium octangulatum*, Donovan, V, pl. 162; *Dentalium striatulum*, Maton and Rackett, p. 238; Montagu, Sup., p. 155.

Tube strong, white, arcuated, tapering to a very fine point, and furnished with eight strong, longitudinal ribs, which give to the base, or wider end, an eight-sided appearance; the interstices between the ribs are tristriated. Length about two inches.

A local species, found on the sands at Lelant, Cornwall; I met with a single specimen at Holy Island.

##### 4. DENTALIUM LABIATUM, pl. LVI, f. 4, 5.

*Dentalium labiatum*, First Ed., pl. 1, f. 4, 5.

Tube strong, smooth, white, subarcuated, and truncated at the smaller end; apex closed by a perforated, testaceous lid.

I found several specimens of this shell in Lough Strangford, Ireland. They are now in the cabinet of Lady Jardine.

##### 5. DENTALIUM GADUS, pl. LVI, f. 1.

*Dentalium Gadus*, First Ed., pl. 1, f. 1; Montagu, p. 496, pl. 14, f. 7; Maton and Rackett, p. 238.

Tube subpellucid, glossy, snow-white, considerably arcuated; contracted towards the larger end, and tapering to a very small point at the other extremity. Length about three-eighths of an inch; diameter about one-sixteenth.

Inhabits the British Channel, but is a very rare species.

## CLASS THIRD.

### CIRRIPEDA.

The animals are soft, destitute of a head, and consequently of eyes; covered with a shell, and are incapable of locomotion, being always affixed to extraneous bodies.

The whole of the Cirripedes are multivalve; that is, consisting of more than two pieces, or valves.

#### ORDER I.—PEDUNCULATA.

Body supported on a tubular, membranaceous, moveable peduncle, the base of which is affixed to stones and other marine bodies, or timber floating in the ocean.

##### GENUS 1.—OTION.—Leach.

Body of the animal subquadrate, placed on a fleshy peduncle, with an ovate, wide aperture, for the passage of the ciliated tentacula, surmounted by two auriform processes; shell concealed, and composed of five widely separated, hidden valves; two semilunate ones situate at the lower sides of the aperture, two very small terminal, two very small ones placed on each side of a small fissure at the top of the aperture, and a dorsal very minute one.

1. OTION BLAINVILLII, pl. LI, f. 13, 14, 15.

*Otion Blainvillii*, First Ed., pl. 5, f. 13, 14, 15.

*Variety 1*, f. 18.

*Otion Blainvillii*, Leach, Ency. Brit. Sup., Art. Cirripedes, pl. 57, f. 3; Lamarck, V, p. 510; *Lepas Blainvillii*, Brown, Ency. Brit., VI, p. 404; Ib., Conch. Text Book, p. 148, pl. 19, f. 1.

Ventricose, membranaceous, seated on a tube, and surmounted by two auriform appendages; colour whitish, spotted, and streaked with brownish-purple.

Found alive on a piece of rotten wood, on the south coast of Devon.

*Variety 2*, f. 14, 15.

*Lepas cornuta*, Montagu, Linn. Trans., XI, p. 179, pl. 12, f. 1.

Found alive on the bottom of a transport, stranded on the Devonshire coast.

It is very doubtful whether shells of this genus have ever bred in the British seas.

##### GENUS 2.—CINERAS.—Leach.

Animal with a quadrate body, seated on a fleshy peduncle, covered with a membranaceous epidermis; an aperture in front for the passage of the ciliated tentacula; immediately over this are a pair of small elongated valves, placed nearly horizontal; two tripartite valves situate just below the aperture, one on each side, and placed nearly perpendicularly, and an angulated, keel-shaped, dorsal valve, but these do not cover the body.

1. CINERAS VITTATA, pl. LVI, f. 16, 18.

*Cineras vittata*, var. *a*, First Ed., pl. 5, f. 16, 18; Leach, Ency. Brit. Sup., pl. 57, f. 1; Lamarck, V, p. 408; *Lepas vittata*, Brown, Ency. Brit., VI, p. 404; *Lepas membranacea*, Montagu, Sup., p. 164; Ib., Linn. Trans., XI, p. 182, pl. 12, f. 2.

Membranaceous, ventricose, truncated, and angular at the summit; olive-green with black stripes, and fine, minute, narrow, distant valves.

*Variety b*, f. 17.

Found on the coast of Wales, and has been met with on the Forfarshire coast, near Montrose.

2. CINERAS AURITA, pl. LI, f. 19.

*Cineras aurita*, First Ed., pl. 1, f. 19; *Lepas aurita*, Brown, Ency. Brit., VI, p. 404.

Peduncle and whole external membrane greenish ash-coloured, with three longitudinal lines of black; two short, rounded, auriform, blunted processes behind.

Differs from the preceding species in being devoid of white markings, and probably only a variety of that shell.

Found at Plymouth.

##### GENUS 3.—POLLICIPES.—Leach.

Body covered by a shell, and supported by a tubular, tendinous, squamiferous peduncle, which seldom exceeds two inches in length; shell multivalve, compressed on the sides, with the valves nearly contiguous and unequal; valves thirteen or more in number, those on the sides smallest; five upper valves much larger than the others; the anterior pair conical, elongated, with their sides reflected backwards, situate on each side of the opening; the central, or terminal pair largest, and trapeziform, with an acute angle at the posterior extremity; dorsal valve greatly elongated, broad at the base, rounded in the back, with an acute apex; between these, in the peduncle, are a number of smaller, testaceous, generally triangular studs.

1. POLLICIPES CORNUCOPIA, pl. LI, f. 11, 12.

*Pollicipes cornucopia*, var. *a*, First Ed., pl. 5, f. 11, 12; Lamarck, V, p. 406; Leach, Ency. Brit. Sup., Cirripedes, pl. 57; Brown, Ency. Brit., VI, p. 403; *Lepas Pollicipes*, Montagu, Sup., p. 6, pl. 28, f. 5.

Valves smooth and glossy; peduncle slightly compressed, variable in length, and covered with numerous, small, glossy, brown, shagreen-like scales, arranged in an imbricated manner, and entirely covering the membranaceous skin.

*Variety b*, f. 12.

Found on drifted wood, in the Frith of Forth, and also on the Irish coast.

## GENUS 4.—SCALPELLUM.—Leach.

Shell laterally compressed, subquadrate, acuminate above; and composed of thirteen valves, one pair acuminate and apical, another pair ventral, two pair lateral, and an arcuated one on the back; attached to extraneous substances by a short, scaly, or hairy peduncle.

## 1. SCALPELLUM VULGARE, pl. LI, f. 7, 9, 10.

*Scalpellum vulgare*, First Ed., pl. 5, f. 7, 9, 10; Leach, Ency. Brit. Sup., Cirripedes, pl. 57; Ib., MSS., p. 1; *Pollicipes scalpellum*, Lamarck, V, p. 407; Brown, Ency. Brit., VI, p. 403.

Peduncle horn-coloured, scaly, attenuated below, and covered with smooth scales; shell compressed, provided with thirteen horn-coloured valves, with obsolete striæ.

Found on many of the British and Irish coasts, adhering to rotten timber, &c.

*Variety a*, f. 7. *Valves close, strongly striated concentrically; peduncle with the scales set in regular rows.*

*Scalpellum vulgare*, Leach, Ency. Brit. Sup., pl. 57.

*Variety b*, f. 9. *Valves considerably apart, substriated concentrically; peduncle with close-set, imbricated scales.*

In Lady Jardine's cabinet.

*Variety c*. *Valves all separated, and concentrically substriated; side valves with a central, projecting point; peduncle with the scales set in regular annulations.*

Donovan, pl. 166, f. 1.

## 2. SCALPELLUM SMILIUM, pl. LI, f. 8.

*Scalpellum vulgare*, First Ed., pl. 5, f. 8; *Smilium Peronii*, Sowerby, Conch. Man., p. 260, pl. 2, f. 36; *Lepas scalpellum*, Montagu, p. 18, pl. 1, f. 4.

Shell consisting of thirteen smooth, light brown valves, ten of them in pairs, placed laterally, and subtriangular; one situated posteriorly; peduncle with annular, scaly processes, slightly imbricated, and beset with numerous, fine, short hairs.

Found at Sandwich and Plymouth, in deep water.

## GENUS 5.—PENTELASMIS.—Leach.

Shell laterally compressed, conical, and composed of five valves, held together by a membranous, ligamentary process; lower valves the largest, of a subtrigonal form, a little convex, and acute at their anterior base; upper lateral pair elongated, and subquadrate, dorsal one lanceolate, carinated, and arcuated; seated on a peduncle, which is of variable length.

## 1. PENTELASMIS ANSERIFERUS, pl. LI, f. 1.

*Anatifa striata*, First Ed., pl. 5, f. 1; *Lepas anseriferus*, Montagu, p. 16; Donovan, pl. 166; Maton and Rackett, p. 28.

Shell compressed, bluish-white, and glossy; larger valves somewhat inflated behind; four of them with strong, radiating striæ, assuming the character of furrows towards the margins of the valves, which are crossed by very fine striæ, giving them a faint reticulated appearance; angles of the valves sharp, especially the apical one; dorsal valve compressed at the sides, and brought to a fine carinated margin; superior valves much compressed, rendering the shell extremely thin and flat on the posterior side. Length an inch; breadth three-quarters.

Found on drifted wood, on several of the British and Irish coasts.

## 2. PENTELASMIS STIATUS, pl. LI, f. 4, 5, 6.

*Anatifa striata*, First Ed., pl. 5, f. 4, 5, 6; *Lepas sulcata*, Montagu, p. 17, pl. 1, f. 6; Maton and Rackett, p. 29.

Shell compressed, subtriangular; the inferior valves with fifteen strong ribs, diverging from the lower anterior angle; that which runs along the front is larger than the others, and forms a margin; the two superior valves terminating above in an acutely pointed apex; with seven or eight ribs, and smaller intermediate ones, diverging from the posterior margin; dorsal valve somewhat compressed, with strong, longitudinal striæ, and a smooth, subcarinated edge; colour yellowish-white; peduncle short, dusky. Length a quarter of an inch; breadth nearly the same.

Found attached to *Gorgonia flabellum*, on the Dorsetshire coast, near Portland Island.

*Variety b*, f. 5, 6.

*Lepas striata*, Wood, Gen. Conch., p. 164, pl. 10, f. 5; Leach, Ency. Brit. Sup., Cirripedes, pl. 57; *Pentelasmis pumicicola*, Leach, MSS., p. 1.

Found on many of the coasts of Britain and Ireland, attached in clusters to rotten wood, stones, &c. Montagu mentions its having been found on *Gorgonia flabellum*, near Portland Island.

## 3. PENTELASMIS ANATIFERUS, pl. LII, f. 1, 2, 3, 4.

*Anatifa Lævis*, First Ed., pl. 4, f. 1, 2, 3, 4; Lamarck, V, p. 404; *Pentelasmis anatifera*, Leach, MSS., p. 1; *Lepas anatifera*, Pennant, IV, p. 74, pl. 38, f. 9; Donovan, I, pl. 7; Montagu, p. 15; Maton and Rackett, p. 28.

Shell compressed, of a bluish-white, and very glossy; two lower valves somewhat triangular, longitudinally wrinkled, with nearly obsolete striæ, radiating from the lower interior angle; two superior valves elongated, and tapering to an obtuse point, upper portion angulated on both sides, apex rounded, these have likewise obsolete, radiating striæ, and are longitudinally wrinkled from the upper posterior angle; dorsal valve long, slender, arcuated, smooth down the middle, and sulcated on the sides; connecting cartilage and peduncle of a reddish-orange, frequently inclining to scarlet, the latter extremely variable in length, as will be seen from the different specimens figured; in a solitary instance, we met with it of a pale brown, as in fig. 1.

Found attached to pieces of rotten wood, on many of the British and Irish coasts, and is the most common species of the genus.

Fig. 2 and 4, the more ordinary form of the species.

Fig. 1, more dilated, the dorsal valve appearing as if jointed.

Fig. 3, a rare variety, with the larger valves more dilated than usual, and with strong striæ. In the cabinet of Mr. Albany Hancock, Newcastle-upon-Tyne.

## 4. PENTELASMIS DENTATUS, pl. LII, f. 5.

*Anatifa dentata*, First Ed., pl. 4, f. 5; Lamarck, V, p. 405; Bruguière, Dict., No. 3; *Lepas dentata*, Dillwyn, Cat., p. 32.

Shell with very smooth, glossy valves, of a bluish-white; agreeing in every particular with those of *P. anatifera*, excepting the dorsal valve, which is provided with a series of oblique, saw-like teeth; peduncle short, and of a pale scarlet colour.

Found on the Northumberland coast, near Seaton. In Lady Jardine's cabinet.

5. PENTELASMIS RADULA, pl. LI, f. 3.

*Anatifa radula*, First Ed., pl. 5, f. 3; *Pentelasmis radula*, Leach, MSS.; *Lepas dentata*, Brown, Ency. Brit., VI, p. 404.

Shell subcompressed; the larger valves acutely pointed, with regular series of prominent, oblique ribs, their anterior edges with six sharp, saw-like teeth, the superior ones largest, and gradually diminishing as they descend, thickly beset with sharp, imbricated scales, which have a rasp-like appearance; superior valves terminating in a lengthened, acute point, and covered by undulating, rough striæ; dorsal valve arcuated, and smooth; peduncle very small.

Besides the ribs on the larger valves, the series of teeth on the anterior margins of the larger valves will at once distinguish this curious species from *P. dentatus*, in which the serrated teeth are placed on the centre of the dorsal valve.

Found on the Devonshire coast, but is very rare.

6. PENTELASMIS FASCICULARIA, pl. LI, f. 2.

*Anatifa fascicularia*, First Ed., pl. 5, f. 2; *Pentalasmis Ellisii*, Leach, MSS., p. 1; *Anatifa vitrea*, Lamarck, V, p. 405; Ellis, Zoophytes, p. 167, pl. 15, f. 6; *Lepas fascicularis*, Montagu, p. 557; Maton and Rackett, p. 30; *Lepas dilata*, Donovan, pl. 144.

Shell of a pale horn-colour, extremely thin and fragile; valves with large wrinkles; larger valves much expanded posteriorly, and becoming suddenly hollow, terminate in a beak-like point; dorsal valve with an acute protuberance in its centre, and frequently with one below; apical valves much pointed, and have a considerable inclination backwards, producing a convexity on the anterior side of the shell; peduncle very short, and very thin.

This species is always found congregating in large masses.

First found in the British Channel, and has been since met with on many of the British coasts, and especially on the western coast of Ireland.

## ORDER II.—SESSILIA.

### GENUS 1.—PYRGOMA.—Savigny.

Shell univalve, somewhat conical, generally compressed, and usually seated on Madrepores or other zoophytes; open at the apex, which is small, and protected by a four-valved operculum, the posterior ones sometimes much elongated, these are variable, and closed at the base by a deeply cup-shaped testaceous valve; inside perpendicularly striated or grooved.

1. PYRGOMA ANGLICA, pl. LIII, f. 27, 28, 29.

*Adna Anglica*, First Ed., pl. 7, f. 27, 28, 29; Leach, MSS., p. 1.

Shell conical, longitudinally ribbed, with many, nearly obsolete, transverse wrinkles; apex with a very small aperture, and protected by a bivalve, obliquely striated operculum; colour rosy.

Fig. 28, the operculum.

Inhabits the *Coryophyllia Anglica*, and is frequently found in Plymouth Sound.

### GENUS 2.—BALANUS.—Bruguière.

Shell sessile, conical; frequently an elongated cone; composed of six valves, four of which are larger than the others, and of nearly equal size, and all of them locked by their sides; apex open, of a subtrigonal or elliptical form; base closed by a testaceous plate, by which it adheres to extraneous substances; operculum bipartite, and consisting of four valves, of which the posterior pair are the most prominent; exterior surface always covered by a thin, elastic, horny epidermis.

1. BALANUS BALANOIDES, pl. LIII, f. 17, and pl. LIV, f. 4, 5.

*Balanus ovularis*, First Ed., pl. 6, f. 4, 5, and pl. 7, f. 17; Lamarck, V, p. 392; *Balanus balanoides*, Montagu, p. 7; *Lepas balanoides*, Donovan, pl. 36, f. 2; Maton and Rackett, p. 23; Brown, Ency. Brit., VI, p. 402.

Shell subconic, subdepressed; valves smooth, white, sometimes deeply sulcated at the base; aperture wide; operculum with the two anterior valves slightly striated transversely, the posterior ones smooth.

Fig. 8, 9, valves of the operculum.

Fig. 5, an elongated variety.

A very common species, adhering to muscles and oysters.

2. BALANUS COMMUNIS, pl. LIII, f. 23, and pl. LIV, f. 1.

*Balanus communis*, First Ed., pl. 6, f. 1, and pl. 7, f. 23; Montagu, p. 6; *Lepas Balanus*, Pennant, IV, p. 72, pl. 37, f. 4; Donovan, I, pl. 30, f. 1; Maton and Rackett, p. 23; Fleming, Edin. Ency., Art. Conch., p. 102.

Shell strong, rugged, conic, compartments unequal, with many irregular, longitudinal, squamose ribs; the interstices with transverse wrinkles; aperture rather contracted, and furnished with a four-valved operculum; posterior valves spreading a little at the apex; anterior valves transversely striated, and provided with a longitudinal furrow; colour cinereous-brown.

Common on most of the coasts of Britain and Ireland, adhering to extraneous substances.

3. BALANUS RUGOSUS, pl. LIII, f. 4, 7, 8, and 21, and pl. LIV, f. 6.

*Balanus rugosus*, First Ed., pl. 6, f. 6, and pl. 7, f. 4 and 20; Montagu, p. 8; Fleming, Edin. Ency., Art. Conch., p. 101; Maton and Rackett, p. 25; *Lepas borealis*, Donovan, pl. 160, lower figure.

Shell subconic, divided into six compartments by irregular, inequidistant furrows, those of the posterior side broadest, and crossed with deep divisions, formed by the lines of growth, these are sometimes wrinkled or striated longitudinally; aperture very large, inner margin transversely ridged, and closed by a four-valved operculum; the dorsal valves a little apart and reflexed at the apex; upper half of anterior valves smooth, with transverse, strong striæ on their lower half; colour cream-white.

Fig. 21, an elongated variety, the *B. fistulosus* of authors.

Fig. 13, 14, the operculum.

Common on many of the British and Irish coasts.

4. BALANUS COSTATUS, pl. LIV, f. 2, 3.

*Balanus costatus*, First Ed., pl. 6, f. 2, 3; Montagu, p. 11; Fleming, Edin. Ency., Art. Conch., p. 101; *Lepas costata*, Donovan, I, pl. 30, f. 2; Maton and Rackett, p. 24.



Shell subconic, depressed; with from seventeen to nineteen nearly equidistant, divergent, smooth ribs, extending considerably beyond the base, which is nearly circular; in some instances two or three are situate closer to each other than the rest; aperture small, subovate, with its edge very regular and even; operculum pale pink, four-valved, and very obtuse at the apex; anterior valves striated obliquely.

Not uncommon on many of the British and Irish coasts.

The very distinct and characteristic specimen from which we made our drawing of fig. 3, pl. LIV, was found at Seaton, Northumberland, by W. C. Trevelyan, Esq., and is in the cabinet of Sir John Trevelyan, Bart., at Wallington.

5. *BALANUS CANDIDUS*, pl. LIV, f. 8, 9, 10, 11, 12.

*Balanus Scoticus*, First Ed., pl. 6, f. 8, 9, 10, 11, 12; *Balanus candidus*, Leach, MSS., p. 2.

Shell conical, nearly smooth; with six unequal valves, longitudinally wrinkled, and very remote, nearly obsolete striæ on the raised portions; aperture very large, extremely irregular on the edge, internally striate transversely; operculum abruptly conical; posterior valves with serrated external margins, and striated transversely; anterior valves with numerous, strong, transverse ribs, which are crossed by many fine, longitudinal striæ, producing a decussated appearance, and with their internal margins serrated.

Fig. 11, 12, the operculum.

Fig. 8 is an elongated, cylindrical variety, found on the Devonshire coast, by Dr. Leach. The species seems very variable in form.

This is the largest species of *Balanus* found in our seas, and seems pretty widely diffused. Fig. 10 was found by W. C. Trevelyan, Esq., at Hartlepool, adhering to a specimen of *Fusus antiquus*. Fig. 9 was figured from a specimen in the British Museum, and dredged in the Frith of Forth, where it is not uncommon; and I have lately procured some large and beautiful specimens from the Irish coast.

6. *BALANUS SCOTICUS*, pl. LIII, f. 1, 2, 3, and 22.

*Balanus Scoticus*, Wood, Gen. Conch., p. 40, pl. 6, f. 3.

Shell subconic; surface divided into irregular, triangular compartments, obsoletely striated transversely; aperture large; operculum triangular; anterior valves with strong, transverse striæ; posterior valves smooth, with greatly arcuated and sharp points.

Fig. 2, 3, the operculum.

Found at Eyemouth, Frith of Forth, and at the mouth of the Tay, adhering to muscles, stones, &c.

7. *BALANUS PUNCTATUS*, pl. LIII, f. 5, 6, 13, 20.

*Balanus punctatus*, First Ed., pl. 7, f. 5, 6, 13, 20; Montagu, p. 8, pl. 1, f. 5; Fleming, Edin. Ency., p. 101; Brown, Ency. Brit., VI, p. 402.

Shell subconic, with indistinct compartments; generally with numerous, longitudinal, narrow ribs, and several transverse lines of growth; aperture wide, rather plain on the edge; operculum somewhat depressed, with numerous punctures; front valves finely striated transversely; posterior valves obtuse at the point, with the front margins deeply indented.

Fig. 5, 6, the operculum.

Fig. 20, an elongated variety.

Common on many of the British and Irish coasts, and is plentiful on the rocks between Kinghorn and Kirkcaldy, Fifeshire.

8. *BALANUS CRANCHII*, pl. LIII, f. 9, 10, 11, 12.

*Balanus Cranchii*, First Ed., pl. 7, f. 9, 10, 11, 12; Leach, Ency. Brit. Sup., Cirripedes, pl. 57; *Lepas Cranchii*, Brown, Ency. Brit., VI, p. 403.

Shell a depressed cone; compartments indistinct; sides rounded, smooth, with numerous, longitudinal, frequently interrupted striæ; basal margin extremely uneven; aperture very small, somewhat pyriform, and smooth at the edges; operculum very large in proportion to the size of the aperture; anterior valves with strong, transverse striæ in front, and becoming arcuated posteriorly; when separated, their internal margin is found to be strongly serrated; posterior valves striated transversely, with greatly arcuated, sharp points; external surface of a reddish-purple, tinged with pale yellowish-buff, and with from two to three transverse purple zones.

Fig. 11, 12, the operculum.

Common at Tenby, and other parts on the coast of Wales.

9. *BALANUS CONOIDES*, pl. LIV, f. 7.

*Balanus conoides*, First Ed., pl. 6, f. 7; *Lepas conoides*, Donovan, I, pl. 30, f. 3; Montagu, p. 12; Fleming, Edin. Ency., VII, p. 101; Maton and Rackett, p. 24.

Shell conic; valves pointed at the apex; compartments obscure, the three posterior ones larger than the others; whole surface longitudinally striated, and slightly so transversely, producing a reticulated appearance, and of a pale reddish-purple colour; aperture very small. Diameter at the base about three-eighths of an inch.

Found at Weymouth, by Mr. Bryer, attached to a specimen of *Pentelasmis lævis*.

This is probably a foreign species.

10. *BALANUS MONTAGUI*, pl. LIII, f. 24, 25, 26.

*Acasta Montagui*, First Ed., pl. 7, f. 24, 25, 26; *Balanus spongeosus*, Montagu, Sup., p. 2; Fleming, Edin. Ency., VII, p. 101.

Shell ovate; with six angulated compartments, their points extending considerably above the margin of the aperture; three anterior divisions broader and not so long as the posterior ones; external surface wrinkled, and provided with numerous, spiniform processes; operculum four-valved; anterior pair with strong, regular, deep, but narrow ridges, crossed by longitudinal striæ, producing a decussated aspect, internal margins deeply serrated; posterior pair larger than the others, and with considerably arcuated, sharp points; colour of a livid or chocolate-brown. Length half an inch; breadth somewhat less.

Fig. 25, shell the natural size.

Fig. 24, magnified.

Fig. 26, the operculum.

Found embedded in sponge, at Portland Reach, by the late Mr. Bryer, of Weymouth.

11. *BALANUS SPONGICOLA*, pl. LIII, f. 14, 15, 16.

*Balanus spongicola*, First Ed., pl. 7, f. 6, 14, 15; Leach, MSS., p. 1.

Shell cylindrical; with unequal compartments, the elevated portion rising above the margin of the aperture, which is as wide as the base of the shell; operculum with four valves; the anterior ones with pretty strong, slightly oblique, transverse striæ, and decussated by rather slender, waved, longitudinal striæ; posterior valves longitudinally striated, with considerably

arcuated and sharp points; whole exterior surface irregularly wrinkled, both longitudinally and transversely, and of a deep purplish rosy hue on the higher portions.

Fig. 14, 15, the operculum.

Found by Dr. Leach, enveloped in sponge, on the Devonshire coast, and is not uncommon.

*Shells with a bivalve operculum.*

#### GENUS 3.—CLITIA.—Leach.

Shell a depressed, irregularly-shaped cone, attached by the base, and consisting of four unequal, dissimilar valves, two larger and two smaller, laterally united by the interlocking of their dentated margins; aperture somewhat trapeziform, laterally placed, and entirely filled by a bipartite operculum, one of the

pieces of which is irregularly quadrate, and the other nearly triangular.

#### 1. CLITIA VERRUCA, pl. LIII, f. 30.

*Creusia verruca*, First Ed., pl. 7, f. 30; Lamarek, V, p. 400; *Lepas verruca*, Chemnitz, Conch., VIII, pl. 98, f. 834; *Lepas striata*, Pennant, IV, p. 73, pl. 38, f. 7; *Lepas intertexta*, Donovan, I, pl. 36, f. 1; Maton and Rackett, p. 26; *Balanus striata*, Montagu, p. 12.

Shell much depressed, white; compartments strongly ribbed diagonally, and oblique to each other; the ribs with fine, transverse striæ; margin of the base irregularly serrated; aperture pretty large, oblique, and quite closed by the operculum. Diameter a quarter of an inch, sometimes a little more.

Found adhering to shells, stones, &c., on many of the British and Irish coasts; very common in many localities.

## CLASS FOURTH.

### ANNELIDES.

Animal with a more or less elongated body, having red blood, and inhabiting a testaceous tube, with which, however, they have no muscular adhesion, but from which they never depart during life.

#### ORDER I.—SEDENTARIA.

Animals protected by a testaceous tube, which they never leave during life; branchiæ placed at one extremity of the body.

#### FAMILY I.—SERPULACEA.

Tube solid, calcareous, and adherent to other bodies.

#### GENUS 1.—SERPULA.—Linnæus.

Shell tubular, narrow, gradually widening towards the aperture, and pointed towards the apex; attached irregularly to other bodies; sometimes wound spirally; keeled, imbricated, or plain; aperture round, for the most part, or angulated in the ribbed species.

*Section I.—Shells partially attached to extraneous bodies, and in some instances free.*

#### 1. SERPULA TUBULARIA, pl. LV, f. 9, 10.

*Serpula tubularia*, First Ed., pl. 2, f. 9, 10; Montagu, p. 513; Fleming, Edin. Ency., VII, Art. Conch., p. 67, pl. 204, f. 9; Brown, Ency. Brit., VI, p. 468.

Shell round, irregularly flexous, gradually tapering, opaque, white, slightly wrinkled transversely; always adhering by the smaller end to stones or other extraneous bodies; ascending in a considerable angle from the base, in some instances nearly perpendicularly, and in most instances almost straight.

Inhabits the sea at Torcross, Devonshire, Zetland, and is not uncommon in the Clyde at Rothesay, and other places in the estuary of that river.

#### 2. SERPULA CONTORTA, pl. LV, f. 4.

*Serpula contorta*, First Ed., pl. 2, f. 4.

Shell round, tube irregularly contorted, slightly spiral, and hardly tapering, unattached; cream-white, with irregular, transverse wrinkles.

Found at Dunbar, by General Bingham.

#### 3. SERPULA SPIRALIS, pl. LV, f. 6.

*Serpula spiralis*, First Ed., pl. 2, f. 6.

Shell a spiral, subtriangular tube, with a carinated ridge along its superior portion, which projects in a tooth-like form over the subtriangular aperture.

Found at Dunbar, by General Bingham.

#### 4. SERPULA PERVERSA, pl. LV, f. 7.

*Serpula perversa*, First Ed., pl. 2, f. 7.

Shell a reversed spiral, subtriangular tube, with a carinated ridge along its superior portion, and projecting beyond the aperture, which is slightly subtriangular.

Found at Dunbar, by General Bingham.

Section II.—Shells attached to extraneous bodies nearly their whole length.

5. SERPULA TRIQUETRA, pl. LV, f. 1, 5.

*Serpula triquetra*, First Ed., pl. 2, f. 1, 5; Pennant, IV, p. 146, pl. 91, f. 157; Donovan, pl. 95; Montagu, p. 511; Maton and Rackett, p. 244; Fleming, Edin. Ency., VII, p. 67.

Tube adhering its whole length, strong, opaque, irregularly contorted; sometimes nearly straight, or slightly flexous; with transverse wrinkles, and provided with a central dorsal carina, which in some instances becomes nearly obsolete at the larger end of the tube; in some specimens the ridge is elevated, and in others depressed; spreading widely at the base; aperture subtriangular; colour yellowish-white, sometimes of a fine red, orange, citron, or rose-colour.

Found on many of the British and Irish coasts, adhering to old shells, stones, &c.

6. SERPULA VERMICULARIS, pl. LV, f. 2, 3.

*Serpula vermicularis*, First Ed., pl. 2, f. 2, 3; Pennant, p. 146, pl. 91, f. 158; Montagu, p. 509; Maton and Rackett, p. 240; Brown, Ency. Edinensis, II, p. 556, pl. 55, f. 12; Ib., Ency. Brit., VI, p. 468.

Tube strong, adhering its whole length, cylindrical, white, transversely wrinkled, contorted in various directions, tapering gradually to a fine point; aperture circular.

Common on most of the British and Irish coasts.

7. SERPULA SERRULATA, pl. LV, f. 8.

*Serpula serrulata*, First Ed., pl. 2, f. 8; Fleming, Edin. Ency., VII, p. 67, pl. 204, f. 8.

Tube bluish-white, smooth, glossy, diaphanous, adhering, subtriangular, slightly contorted; base spreading pretty widely, tapering rather abruptly to a fine point; back with an elevated, thin, sharp ridge, finely but irregularly serrated, and equal in dimensions to the breadth of the tube; aperture large, nearly orbicular, with the tooth-like termination of the carina projecting over it.

Discovered by Dr. Fleming, in deep water, adhering to stones, on the coast of Zetland; and I found it plentiful in Rothesay Bay, in company with my friend James Smith, Esq., of Jordan Hill, near Glasgow, while on a dredging excursion.

The shell is so transparent, that the animal can be distinctly seen through it; and by the aid of a strong lens the pulsation may be observed.

GENUS 2.—SPIROBIS.—Lamarck.

Shell consisting of a testaceous tube, spirally twisted into an orbicular form on a horizontal plane, depressed, and adhering below; the aperture terminal, rounded, or angular.

1. SPIROBIS NAUTILOIDES, pl. LVI, f. 45.

*Spirorbis Nautiloides*, First Ed., pl. 1, f. 45; Lamarck, V, p. 359; *Serpula spirorbis*, Donovan, I, pl. 9, f. 1, 2; Montagu, p. 498; Maton and Rackett, p. 241.

Shell opaque, white, much depressed; with three or four lateral volutions, rounded above, and slightly wrinkled transversely; the central volution lower than the others, and forming an umbilicus; base flat, and expanded; aperture subtriangular.

Common on most of the British and Irish coasts, adhering to *algæ* and other marine plants, as well as to stones and shells.

A *lusus* of this shell is not unfrequent with an erect aperture, and one or two volutions turning a little spirally upwards.

2. SPIROBIS SPIRILLUM, pl. LVI, f. 41, 42, 53, 54.

*Spirorbis spirillum*, First Ed., pl. 1, f. 41, 42, 53, 54; Lamarck, V, p. 359; Fleming, Edin. Ency., VII, p. 68; *Serpula spirillum*, Montagu, p. 499; Pulteney, Hutch. Dorset, p. 52, pl. 19, f. 27; Maton and Rackett, p. 240.

Shell subdepressed, subpellucid, glossy, white; with two or three subcylindrical, slightly wrinkled, somewhat lateral volutions; central volution lower than the others, forming an umbilicus, and pervious in some instances; aperture subtriangular, and not unfrequently turned upwards; attached by the smaller end. Diameter not more than an eighth of an inch.

Fig. 53, 54, *var.*, *Spirorbis sinistrosa*, Montagu, p. 504.

Sometimes the volutions wind spirally upon each other.

Distinguished from *S. Nautiloides* by its glossy aspect, its more cylindrical form, and not spreading at the base.

Generally found adhering to marine plants, corallines, and Crustacea, and not to stones.

3. SPIROBIS MINUTUS, pl. LVI, f. 51.

*Spirorbis minutus*, First Ed., pl. 1, f. 51; Fleming, Edin. Ency., VII, p. 68, pl. 205, f. 2; *Serpula minuta*, Montagu, p. 505; Maton and Rackett, p. 241.

Shell heteroclitical, depressed, yellowish-white; with two or three lateral, transversely wrinkled volutions, and a dorsal carina. Diameter a quarter of a line.

Found adhering to corallines, on the Devonshire and Northumberland coasts.

4. SPIROBIS HETEROSTROPHUS, pl. LVI, f. 55.

*Spirorbis heterostrophus*, First Ed., pl. 1, f. 55; Fleming, Edin. Ency., VII, p. 68, pl. 205, f. 1; *Serpula heterostropha*, Montagu, p. 503; Maton and Rackett, p. 242.

Shell strong, dull white; consisting of two or three heteroclitical volutions, with three lateral, spiral ridges, crossed by strong wrinkles; base flat, somewhat spreading; aperture orbicular. Diameter not a line.

Found adhering to oysters and other shells, and to *algæ*, on many of the British and Irish coasts.

5. SPIROBIS HETEROCLITICUS, pl. LVI, f. 57.

*Spirorbis heterocliticus*, First Ed., pl. 1, f. 57.

Shell nearly cylindrical, thick, white, opaque, smooth; with four volutions, the outer one very large, internal ones small, forming a large and deep umbilicus; aperture nearly orbicular, and placed below the margin of the outer volution. Diameter one-tenth of an inch.

Found by my late friend General Bingham, adhering to the roots of *algæ*, at Dunbar.

6. SPIROBIS GRANULATUS, pl. LVI, f. 47.

*Spirorbis granulatus*, First Ed., pl. 1, f. 47; Fleming, Edin. Ency., VII, p. 68; *Serpula granulata*, Montagu, p. 500; Donovan, III, pl. 100.

Shell subdepressed, white, opaque; with two volutions, deeply grooved spirally, and transversely wrinkled, more strongly so in the furrows, umbilicated; aperture orbicular, with an annular tip. Diameter an eighth of an inch.

Found plentifully on the rocks and stones at Milton, Devonshire, and other localities.

7. SPIRORBIS CORRUGATUS, pl. LVI, f. 46.

*Spirorbis corrugatus*, First Ed., pl. 1, f. 46; Fleming, Edin. Ency., VII, p. 68; *Serpula corrugata*, Montagu, p. 502; Maton and Rackett, p. 242.

Shell strong, with rough transverse wrinkles, white, and only a small portion of the second volution visible; centre rather deeply umbilicated; base spreading but little; aperture orbicular. Diameter an eighth of an inch.

It is easily distinguished from *S. spirillum*, in being considerably stronger, and the base never spreading so much.

Found on the slate rocks at Milton.

8. SPIRORBIS CORNEUS, pl. LVI, f. 43.

*Spirorbis corneus*, First Ed., pl. 1, f. 43; Fleming, Edin. Ency., VII, p. 68; *Serpula cornea*, Adams, Linn. Tr., V, p. 6, pl. 1, f. 33, 34, 35; Montagu, p. 503; Maton and Rackett, p. 243.

Shell regular, round, subdepressed, pellucid; with three horn-coloured volutions.

Inhabits the coast of Pembrokehire.

9. SPIRORBIS LUCIDUS, pl. LVI, f. 56, 60.

*Spirorbis lucidus*, First Ed., pl. 1, f. 56, 60; Fleming, Edin. Ency., VII, p. 69, pl. 205, f. 4; *Serpula reflexa*, Adams, Linn. Tr., V, p. 6, pl. 1, f. 31, 32; *Serpula lucida*, Montagu, p. 506; Maton and Rackett, p. 243.

Shell irregular in form, more or less spiral, and with two or three volutions, sometimes placed laterally, in others they wind upon each other, and are often apart, or scalariform; very pellucid, glossy, and white; aperture orbicular, projecting upwards. Diameter half a line.

Distinguished from all other species by its glassy appearance.

Found on many of the British and Irish coasts, adhering to different species of *sertularia* and other corallines.

10. SPIRORBIS CONICUS, pl. LVI, f. 58.

*Spirorbis conicus*, First Ed., pl. 1, f. 58; Fleming, Edin. Ency., VII, p. 68, pl. 205, f. 3.

Shell conical, strong, depressed, opaque, dull yellowish-white; two volutions, the exterior one large, with a carina on its superior portion, and embracing the other; aperture towards the top.

Found in Zetland, on old shells, by Dr. Fleming.

11. SPIRORBIS REVERSUS, pl. LVI, f. 52.

*Spirorbis reversus*, First Ed., pl. 1, f. 52; Fleming, Edin. Ency., VII, p. 60; *Serpula reversa*, Montagu, p. 508; Maton and Rackett, p. 243.

Shell more or less spiral, extremely variable, subcylindrical, white, with strong, transverse wrinkles, and tapering to a small point; aperture orbicular, and invariably turning in the reverse direction.

This is the largest species of the genus.

Found on the Devonshire coast, and also in the Frith of Forth.

12. SPIRORBIS ANNULUS, pl. LVI, f. 44.

*Spirorbis annulus*, First Ed., pl. 1, f. 44.

Shell strong, white, opaque, nearly orbicular; with three rounded volutions, crossed by strong, regular, transverse, ring-like grooves; deeply umbilicated; aperture nearly orbicular. Diameter a tenth of an inch.

I found this adhering to an oyster from Prestonpans, Frith of Forth.

13. SPIRORBIS STRIATULUS, pl. LVI, f. 59.

*Spirorbis striatulus*, First Ed., pl. 1, f. 59.

Shell round, spiruliform, umbilicated; with three volutions, rolled upon each other, the exterior one detached at its external termination; surface with numerous, fine, rib-like, spiral striæ; aperture quite orbicular. Diameter one-tenth of an inch.

Found at Dunbar, by General Bingham, adhering to *sertularia*.

14. SPIRORBIS CARINATUS, pl. LVI, f. 48.

*Spirorbis carinatus*, First Ed., pl. 1, f. 48; Fleming, Edin. Ency., VII, p. 68, pl. 20; *Serpula carinata*, Montagu, p. 502; Maton and Rackett, p. 242.

Shell with the exterior angulated volution provided with a dorsal carina; interior volutions concealed by the outer one; umbilicated, and sometimes pervious; base slightly spreading; aperture orbicular.

Found on several of the English and Scottish coasts.

## FAMILY II.—MALDANIÆ.

Branchiæ of the animal intermediate; tube open at both ends.

### GENUS 3.—BROCHUS.—Brown.

Shell tubular, subcylindrical, slightly tapering, and subarcuated; imperforate at the smaller end; aperture orbicular, placed at the larger extremity.

1. BROCHUS TRACHIFORMIS, pl. LVI, f. 10.

*Brochus trachiformis*, First Ed., pl. 1, f. 10; Brown, Conch. Text Book, p. 158, pl. 19, f. 25; *Dentalium Trachea*, Montagu, p. 497, pl. 14, f. 10; Maton and Rackett, p. 239.

Shell subcylindrical, tapering a little, slightly arcuated; with strong, regular, transverse, annular striæ; smaller end imperforate, truncated, and provided with a small, blunt knob; aperture orbicular; colour ferruginous, somewhat paler towards the smaller end. Length somewhat more than an eighth of an inch; diameter about a fifth of its length.

Found on the Devonshire and Welsh coasts, but is a rare and very local species.

2. BROCHUS STRIATUS, pl. LVI, f. 13.

*Brochus striatus*, First Ed., pl. 1, f. 13.

Shell white, subcylindrical, a little arcuated, and rather abruptly tapering to the narrow end, which is destitute of a knob; whole surface covered by fine, close-set, annular striæ; aperture large, nearly orbicular. Length not an eighth of an inch; diameter about a fifth of its length.

This differs from the *B. trachiformis*, in being shorter, less arcuated, in the striæ being much finer, and in having no knob.

Found at Dunbar, by General Bingham.

3. BROCHUS RETICULATUS, pl. LVI, f. 11.

*Brochus reticulatus*, First Ed., pl. 1, f. 11.

Shell cylindrical, abruptly tapering towards the base, where it is provided with a rather long knob; whole surface covered by annular and longitudinal striæ; aperture large and orbicular. Length an eighth and a half of an inch; diameter of aperture a fourth of its length.



I found this species at Killough, Lough Strangford, Ireland. In Lady Jardine's cabinet.

4. BROCHUS ANNULATUS, pl. LVI, f. 12.

*Brochus annulatus*, First Ed., pl. 1, f. 12.

Shell nearly cylindrical; base with a short knob; crossed by pretty strong, annular striæ, decussated by rather slender, longitudinal striæ, and a wide, longitudinal groove on each side, reaching from the aperture to the base; aperture surrounded by a thick ring; the third annulation below, which is much stronger than the others. Length nearly a quarter of an inch; diameter a fifth of its length.

I found this species in Lough Strangford, Ireland. In Lady Jardine's cabinet.

5. BROCHUS GLABRUS, pl. LVI, f. 3.

*Brochus glabrus*, First Ed., pl. 1, f. 3; *Dentalium glabrum*, Montagu, p. 497.

Shell snow-white, nearly cylindrical, considerably arcuated, smooth, glossy, nearly of equal diameter throughout; base rounded. Length not a line; diameter not a fifth of its length.

Found in Biddeford Bay, near Barnstable; on the north coast of Devonshire; and many other situations in Britain and Ireland.

6. BROCHUS LÆVIS, pl. LVI, f. 6.

*Brochus lævis*, First Ed., pl. 1, f. 6; *Dentalium imperforatum*, Walker, Min. Sh., f. 15; Adams, Microsc., pl. 14, f. 3; Montagu, p. 496.

Shell white, or ash-coloured, subcylindrical, very slightly arcuated, extremely smooth, and glossy; base subtruncated, with a small, central protuberance; aperture orbicular, and a little contracted at the margins.

Found in sand, from Sandwich and Falmouth Harbour.

7. BROCHUS ARCUATUS, pl. LVI, f. 9.

*Brochus arcuatus*, First Ed., pl. 1, f. 9.

Shell cylindrical, slightly tapering, and greatly arcuated; bluish-white, extremely glossy. Length nearly an eighth of an inch.

Found in sand, at Bean Haven, Bantry Bay, Ireland, by General Bingham, and in his cabinet.

GENUS 4.—CORNUOIDES.—Brown.

Shell tubular, cylindrical, abruptly tapering, and slightly convoluted at the smaller end, which is imperforate.

1. CORNUOIDES MAJOR, pl. LVI, f. 49.

*Cornuoides major*, First Ed., pl. 1, f. 49; *Serpula recta*, Walker, Min. Sh., pl. 1, f. 14; Fleming, Edin. Ency., VII, pl. 205, f. 8.

Shell smooth; with three nearly cylindrical volutions, the exterior one abruptly increasing, and prolonged in a lengthened, nearly cylindrical, straight tube, terminating in an orbicular aperture. Length not an eighth of an inch; diameter about a sixth of its length.

Found by Mr. Walker, in sand, at Sandwich.

2. CORNUOIDES MINOR, pl. LVI, f. 50.

*Cornuoides minor*, First Ed., pl. 1, f. 50; *Serpula recta*, Walker, pl. 1, f. 12; Fleming, Edin. Ency., pl. 105, f. 9.

Shell smooth, white, and pellucid; with a perforated apex, and consisting of two volutions; interior one very small, the external one abruptly increasing, and prolonged in the form of a lengthened, cylindrical tube, terminating in an orbicular aperture. Length not a tenth of an inch; breadth not a sixth of its length.

Found by Mr. Walker, in sand, at Sandwich, Kent.

## APPENDIX.

### CLASS MOLLUSCA.

After the Appendix was in type, I met with descriptions of several new species which have appeared in a local descriptive catalogue "of the Molluscous Animals of the Counties of Aberdeen, Kincardine, and Banff, by Professor Macgillivray." Although I have not implicit faith in the accuracy of that gentleman's conchological observations, arising from a perusal of his work, yet I am unwilling to withhold the notice of species which *may* turn out to be new.

In justification of what I have said, I shall simply point out one, among many inaccuracies in the work referred to. The Professor, in describing *Crassina compressa*, says "this species comes nearest in form to (Astarte) *Crassina elliptica*; but has little affinity to *Crassina multicostata*, which has by several authors been strangely confounded with it." Now, with respect to its FORM being nearest to *C. elliptica*, I consider these two species are more dissimilar in *form* than any other of the British

Crassinæ; as will be seen by comparing *C. elliptica*, fig. 3, and *C. compressa*, fig. 1, 4, 5, pl. XXXVIII, of this work. I carefully drew and described the original shell of the latter species, from which that accurate observer of Nature, Colonel Montagu, made his description. But afterwards meeting with the fine specimen, formerly the property of Captain Laskey, in the cabinet of the late David Falconer, Esq., of Carlowrie, I substituted it for the drawing I made from the collection of Colonel Montagu, in the British Museum. I am certain of its accuracy, so that the shell which Macgillivray describes cannot possibly be the *C. compressa* of Montagu. In allusion to this same shell, the Professor "strangely confounds" two shells, and refers to a species which is totally distinct;—he says, "Brown's *Crassina sulcata* (pl. XVIII, fig. 10, of First Edition, and pl. XXXVIII, of the present) cannot be Montagu's *Venus sulcata*, the margin in the former being crenate, in the latter plain."

Montagu, in describing that species, says, "the edge crenated." (Page 131.)

With respect to *Crassina multicostata* being "strangely confounded" with *C. elliptica* by several authors, I have not observed these. The former shell was first figured, described, and named by me in the VIII. vol. of the Wernerian Memoirs. It is a *Fossil* species belonging to the Newer Pliocene Deposits, and has never been found recent to my knowledge. The Professor is decidedly in error in referring my *C. convexiscula* to this species.

#### GENUS POLYSTOMELLA.—(Page 1.)

##### 4. POLYSTOMELLA GULIELMINÆ.

*Polystomella Gulielminæ*, Macgillivray, Moll., p. 315.

Shell orbicular, discoidal, equally convex on both sides, and compressed, slanting to a thin subcarinated ambit or back; external volution consisting of about fifteen radiating chambers, elevated, narrow, and convex, with transversely sulcated concave interstices; centres elevated, and the aperture semilunar, convex, thickened at the margin, and moderately raised, with its sides embracing the next convolution. Diameter about the sixteenth of an inch.

Found by Professor Macgillivray, on the beach near Aberdeen, adhering to *Terebellæ* and *Pectenariæ*.

##### 5. POLYSTOMELLA CRENULATA.

*Polystomella crenulata*, Macgillivray, Moll., p. 316.

Shell nearly round, discoidal, considerably compressed, with somewhat convex sides; ambit rounded; external volution provided with about twenty inflated, curved, transversely crenated chambers; partitions concave and crenated; aperture semilunar, narrow, convex; colour bluish-grey. Diameter about the fifteenth of an inch.

Differs from *P. crispa*, in being much less, and in having the entire surface and grooves crenated, and with a convex margin.

Found by Professor Macgillivray, in shell sand from Cruden Bay, and on the beach at Aberdeen, adhering to *Terebella conchilega*.

##### 6. POLYSTOMELLA NAUTILINA.

*Polystomella Nautilina*, Macgillivray, Moll., p. 317.

Shell nautiliform, with umbilicated, somewhat convex sides; ambit rounded; external volution with from ten to twelve small slightly inflated, narrow, smooth, glossy chambers, which increase gradually, and then rapidly towards the last cell, which is large, and granulated towards the umbilicus; partitions depressed, curved, and slightly striated; flat, with two medial ridges, provided with two series of pores, and a nearly flat cover; aperture cordiform, and embracing the next convolution; colour greyish-white. Diameter about the fiftieth of an inch.

Found by Professor Macgillivray, adhering to *Terebella conchilega*, on the beach near Aberdeen, where it is not uncommon.

#### GENUS LAGENA.—(Page 3.)

##### 7. LAGENA GLOBOSA, pl. LVI, f. 37.

*Lagena globosa*, First Ed., pl. 1, f. 37; Fleming, Edin. Ency., VII, p. 68, pl. 204, f. 10; *Vermiculum globosum*, Montagu, p. 523.

Shell somewhat flask-shaped, white, smooth, transparent; aperture small, and nearly orbicular; base rounded.

Found at Sandwich; rare.

##### 8. LAGENA RETICULATA.

*Lagenula reticulata*, Macgillivray, Moll. Ab., p. 38.

Shell somewhat ovately globose, considerably compressed, white, smooth, glossy, and pellucid, with many internal, irregular, opaque, white, reticulated, quadrate spaces; internal cavity simple, with parietal cells; aperture terminal, oval, and ample. Length about the thirty-sixth part of an inch; breadth considerably less.

Found by Professor Macgillivray, among shells and corallines, from the Bay of Aberdeen.

#### GENUS 6.—TRICHOTROPIS.—Broderip.

Turbinated, carinated, umbilicated; aperture large, and entire; columella obliquely truncated; outer lip thin, sharp; covered with a horny epidermis, produced into long cilia; operculum horny, and elastic.

##### 1. TRICHOTROPIS ACUMINATA, pl. LVII, f. 15.

*Trichotropis acuminata*, Jeffreys, MSS.; *Fusus umbilicatus*, Brown, Wernerian Mem., VIII, p. 50, pl. 1, f. 2.

Shell with seven turreted, deeply defined volutions, tapering abruptly to an acute apex, and obliquely flattened above; body provided with seven strong, transverse ribs, and the volutions of the spire with three each; ribs and interstices crossed by fine, oblique, longitudinal striæ, which are hardly visible without the aid of a lens; aperture semi-ovate; pillar lip broadly reflected on the columella, behind which is an elongated umbilicus, extending nearly to the base of the shell; outer lip thin, and crenulated on the exterior margin by the ribs. Length upwards of half an inch; diameter of body nearly three-eighths.

Dredged from deep water in Rothesay Bay, by James Smith, Esq., of Jordan Hill; and has since been found at Oban, Argyshire, by J. Gwyer Jeffreys, Esq., of Swansea, Wales.

#### GENUS BUCCINUM.—(Page 4.)

##### 10. BUCCINUM CARINATUM, pl. LVII, f. 18.

*Buccinum carinatum*, Turton, Conch. Dict., p. 13, pl. 26, f. 94.

Shell oblong-oval, turreted; body large, inflated; spire small, consisting of five or six flat-sided, abruptly decreasing volutions, obliquely flattened above, which, as well as the body, are furnished with a carinated ridge on their superior margin; sutural line of the spire very fine; whole surface of a pale chestnut-colour, covered by remote, transverse, parallel, nearly equidistant striæ, upwards of a quarter of an inch apart from each other, crossed by indistinct, irregular, longitudinal wrinkles; aperture subovate, dilated, and terminating below in a short canal; outer lip somewhat thickened at the edge; inner lip smooth, white, and broadly reflected on the columella, with two slight longitudinal folds on the external side. Length four inches and a quarter; breadth two inches and a half.

Discovered on the strand at Portmarnock, Ireland, by M. J. O'Kelly, Esq., and is the specimen from which our drawing was made. Dr. Turton says another was dredged at Bray, and has also been found at Bulloch, Ireland, by the late Mr. Tardy. It has since been met with at Exmouth.

This may only be a *lusus* of *Buccinum undatum*.

## GENUS FUSUS.—(Page 6.)

## 36. FUSUS BABYLONICUS, pl. LVII, f. 19.

Shell fusiform, subcylindrical; body large, obliquely flattened above; spire not a third the length of the shell, consisting of five cylindrical, rapidly decreasing volutions, which are obliquely flattened above, and terminating in an acute apex; the whole of which, together with the body, with a slight spiral carina on their superior edge; aperture oblong-ovate, narrow above, spreading in the centre, and contracted below into a rather narrow canal of medium length; inner lip small, broadly reflected on the columella; whole surface covered by numerous spiral, somewhat irregular, slightly waved striæ, with inequidistant, nearly obsolete, longitudinal wrinkles; colour cream-white; the aperture pale golden-yellow.

This shell has much the aspect of *Fusus antiquus*, and probably only a *lusus* of that species. I found it on the strand, opposite Hull, and it is now in the splendid cabinet of Thomas Norris, Esq., Red Vales, near Bury, Lancashire.

## 37. FUSUS BOOTHII, pl. LVII, f. 12.

*Fusus Boothii*, Brown, Wernerian Mem., VIII, p. 50, pl. 1, f. 1.

Shell strong, with eight deeply defined, well rounded volutions, tapering to an acute apex; provided with numerous, slightly oblique, strong, longitudinal ribs, which, together with the interstices, are crossed by close-set, strong, spiral striæ, between most of which are finer striæ, giving the shell a lamellated aspect; suture of the spire broad, concave, and not crossed by the ribs, but spirally striate; aperture oblong-ovate, a little contracted above, and furnished with two longitudinal purple belts, leaving the margin next the outer lip white; pillar lip white, smooth, with a slight longitudinal groove near its external margin, and furnished with a brownish-purple spot above; outer lip thick, flattened on the edge with a zigzag groove in its centre, and a slightly rounded sinus above, at its junction with the body; outer margin crenated; canal short, and wide; external surface of a deep chocolate-brown. Length five and a half eighths of an inch; breadth somewhat more than a quarter of an inch.

This beautiful species was dredged in Rothesay Bay, by Mr. Smith, and, with it, the fragment of a shell of the same species, measuring upwards of three-eighths of an inch in diameter, so that this species must attain the size of nearly an inch. When we first removed it from the dredge, we took it for the *F. purpureus*, but on a more close examination, we found it to differ from that shell in the following particulars. It has fewer volutions, the spire is shorter, and not quite so taper, in the thickness and other characters of the outer lip it differs materially, and it is destitute of the striæ inside the aperture.

## 30. FUSUS CARINATUS, pl. LVII, f. 20.

*Murex carinatus*, Pennant, Brit. Zool., IV, p. 123; Donovan, pl. 109; Turton, Conch. Dict., p. 88, pl. 27, f. 95.

I consider this a mere *lusus* of *Fusus antiquus*, which is by no means uncommon in Ireland, sometimes with two, and at others with three carinæ. This is figured from a specimen in the possession of M. J. O'Kelly, Esq.; and Robert Ball, Esq., of Dublin, obliged me with a large specimen which is only bicarinated; and probably figures 10 and 13, pl. VI, is another form of the same.

## GENUS PYRAMIS.—(Page 14.)

## 22. PYRAMIS TRIFASCIATUS, pl. VIII, f. 30.

*Pyramis trifasciatus*, First Ed., pl. 51, f. 30; *Turbo trifasciatus*, Adams, Linn. Tr., V, p. 2 pl. 1, f. 13, 14; *Turbo unifasciatus*, Montagu, p. 327.

Shell smooth, conic, white; spire with four slightly inflated volutions, separated by a narrow and shallow suture; with three purplish-brown bands on the body volution, which become confluent in the two lower volutions of the spire, situate close to the suture; aperture suboval; outer lip thin, and very slightly reflexed; columellar lip somewhat thickened, and reflected.

Found, but rarely, on the shore at Southampton; and Burran Island, Devonshire.

## GENUS PLEUROTOMA.—(Page 8.)

## 4. PLEUROTOMA TREVELLIANUM, pl. LVII, f. 1.

*Pleurotoma Trevillianum*, Turton, Mag. Nat. Hist., VII, p. 351; Macgillivray, Moll., p. 172.

Shell fusiform, turreted; body about double the length of the spire; which consists of six turreted, flat-sided, nearly cylindrical volutions, flattened above, abruptly diminishing, and terminating in an acute apex; sutural line very narrow; aperture pure white, oblong-ovate, terminating in a canal of medium length; outer lip with a pretty deep, rounded sinus near its junction with the body; inner lip smooth, glossy, and rather broadly reflected on the columella; whole surface of a pale yellowish-white, and covered with numerous, close-set, longitudinal, smooth ribs; the interstices covered with many strong, transverse striæ. Length nearly three-quarters of an inch; breadth about a third of its length.

This shell has much the aspect of *Fusus turricula*, but will at once be distinguished from it by the pretty large sinus on the superior portion of the outer lip; its diameter is also greater in proportion to its length, and the ribs and striæ are considerably more numerous.

First discovered by Mr. Bean, at Scarborough, where it is abundant; Macgillivray gives it as a deep water species, off Aberdeen; and I lately procured it among specimens obtained by the dredge, at Prestonpans, East Lothian.

## 5. PLEUROTOMA DECUSSATUM.

*Pleurotoma decussatum*, Macgillivray, Moll. Ab., p. 172.

Shell elongated, fusiform, rather thick; volutions rounded; spire tapering to a fine point; suture distinct; whole covered with longitudinal ribs, narrower than their interstices, which are provided with numerous spiral, thin laminae, also crossing the ribs, on which they form small oblong tubercles; aperture oblong-ovate, with an elongated, oblique canal; colour yellowish-white. Length a quarter of an inch.

Found by Professor Macgillivray, in deep water, off Aberdeen, and at Boddam, near Peterhead.

The Professor says, "It appears to agree with Captain Brown's *Fusus decussatus*." If so, it must be a *Fusus*, because my shell is totally devoid of the distinguishing character of *Pleurotoma*, namely, the sinus in the superior portion of the outer lip, as will be seen by referring to figures 53 and 55, plate V.

## GENUS 18.—LACUNA.—Turton.

Shell thin, subglobose, or ovately subconical; spire short, sometimes very short, with a somewhat obtuse apex; volutions somewhat tumid; aperture subrotund, or subovate; outer lip thin, never reflected, and incomplete posteriorly; columella usually broad, and depressed, with an elongated, narrow umbilicus behind it; whole outer surface covered with a very thin, horny epidermis.

1. LACUNA RETUSA, pl. X, f. 52, 53.

*Lutea lacuna*, First Ed., pl. 46, f. 52, 53.

Shell very thin, subglobose, hyaline, and of a greenish-brown colour; spire extremely small, hardly elevated above the body, and consisting of two volutions; body with a subcarinated zone in the centre; aperture obliquely ovate; outer lip thin, and sharp at the edge; pillar lip narrowly reflected, with a slight slit behind.

Found at Dunbar, by General Bingham.

2. LACUNA PALLIDULA, pl. XIII, f. 17, 19. *Natica pallidula*, p. 25.

3. LACUNA VINCTA, pl. XIII, f. 46. *Phasianella vinctus*, p. 9.

4. LACUNA QUADRIFASCIATA, pl. XIII, f. 35. *Turbo quadrifasciatus*, p. 16.

5. LACUNA BIFASCIATA, pl. XIII, f. 44, 45. *Phasianella bifasciata*, p. 10.

6. LACUNA CORNEA, pl. XIII, f. 47. *Phasianella cornea*, p. 10.

7. LACUNA CANALIS, pl. XIII, f. 48. *Phasianella canalis*, p. 9.

8. LACUNA FASCIATA, pl. XIII, f. 54. *Phasianella fasciata*, p. 10.

9. LACUNA MONTAGUI, pl. LVII, f. 8.

*Helix lacuna*, Montagu, p. 428, pl. 13, f. 6; Maton and Rackett, p. 201.

Shell thin, smooth, pellucid, subglobose, of a light horn-colour; body large, tumid; spire small, consisting of three depressed volutions, the apical one very small, and placed somewhat laterally; aperture large, suboval; outer lip very thin; pillar lip reflected, and white; with a groove-like canal, which terminates in a small, but deep umbilicus. Length a quarter of an inch; breadth nearly the same.

Montagu,—on whose authority we give this shell,—says, “it must not be confounded with *Lacuna pallidula*, whose pillar lip is somewhat of the same form, but much broader; the smaller volutions more lateral, and more compressed; the body and mouth also are greatly larger.”

Found on the Devonshire coast, and on the shore near Southampton.

## GENUS 21.—MARGARITA.—Leach.

Shell trochiform, depressed; volutions few, well defined by the suture; base of body subdepressed, and provided with a large umbilicus; aperture nearly circular, and covered by a horny operculum, consisting of few volutions.

1. MARGARITA AUREA, pl. X, f. 23. *Turbo aureus*, p. 17.

2. MARGARITA CARNEA, pl. X, f. 36, 37. *Turbo carneus*, p. 17.

3. MARGARITA MARGARITACEA, pl. X, f. 28, 29. *Turbo margarita*, p. 17.

4. MARGARITA OLIVACEA, pl. X, f. 30, 31. *Turbo olivacea*, p. 17.

## GENUS 22.—LITTORINA.—Férussac.

Shell turbinated, generally ovate, or oblong-ovate, for the most part thick and solid; spire acuminate and subturreted in some species; very short and obtuse at the apex in others; aperture entire, round, or slightly elliptical, sometimes a little acute above; outer lip sharp-edged, thickened within; columella somewhat flattened; operculum spiral, horny, and elastic, consisting of a few rapidly enlarging volutions, and furnished with a central nucleus.

This genus to be substituted for that of *TURBO*, page 15: it also comprehends the genus *NERITOIDES*, p. 25, and consists of the following species, namely,

1. LITTORINA LITTOREA, pl. X, f. 1, 2, 3, 4, 5, 6, 7, 8, 9. *Turbo littoreus*, p. 15.

2. LITTORINA RUDIS, pl. X, f. 10, 11, 12, 13, 14, and 25. *Turbo rudis*, p. 15.

3. LITTORINA JUGOSA, pl. X, f. 15, 16. *Turbo jugosus*, p. 16.

4. LITTORINA TENEBROSA, pl. X, f. 18, 19. *Turbo tenebrosus*, p. 16.

5. LITTORINA PETRÆA, pl. X, f. 17. *Turbo petræus*, p. 16.

6. LITTORINA LABIATA, pl. X, f. 20, 21. *Turbo labiata*, p. 16.

7. LITTORINA VENTRICOSA. *Turbo ventricosus*, p. 16.

8. LITTORINA DISPAR, pl. X, f. 22. *Turbo dispar*, p. 16.

9. LITTORINA ZICZAC, pl. X, f. 26, 27. *Turbo ziczac*, p. 16.

10. LITTORINA NERITIFORMA, pl. X, f. 24. *Turbo neritiformis*, p. 17.

11. LITTORINA FABALIS, pl. X, f. 38, 39. *Turbo fabalis*, p. 17.

12. LITTORINA STRIATULA, pl. X, f. 33, 34. *Turbo striatulus*, p. 17.

13. LITTORINA NERITOIDES, pl. XIII, f. 14, 15, 21, 22. *Neritoides littoralis*, p. 25.

14. LITTORINA SEXATILIS, pl. LVII, f. 21, 22.

*Littorina sexatilis*, Johnston, Trans. Berwick. Nat. Hist. Club, III, p. 268; Macgillivray, Moll. Ab., p. 138; *Turbo sexatilis*, Bean, MSS.

Shell moderately thick, subglobose, slightly conical; length and diameter nearly equal; spire about a third of the length, consisting of three spirally striated volutions, divided by a deep, well defined suture; body somewhat flattened above, and a little angular below; aperture ample, nearly orbicular, and deep chocolate-brown within; outer lip thin, and united to the body in an angular form; inner lip narrowly reflected on the columella, and provided with a slight callosity, and is of a brownish-purple colour; external surface varying in colour, being white, yellow, or cinereous, tessellated with dull brown or olive. Length and diameter upwards of a quarter of an inch.

Found on the Yorkshire coast, by Mr. Bean, of Scarborough; and Professor Macgillivray gives as localities the Aberdeenshire and Kincardine coasts.



## GENUS RISSOA.—(Page 10.)

## 56. RISSOA TRISTRIATA.

*Rissoa tristriata*, Thompson, Ann. Nat. Hist., V, pl. 2, f. 10; Macgillivray, Moll. Ab., p. 151.

Shell conical, ovate, thin, glossy, subdiaphanous; body ventricose, somewhat longer than the spire; spire consisting of four moderately convex volutions, defined by a rather shallow sutural line, which is accompanied by a narrow spiral line, with also two smaller lines and three striæ, terminating in a rather obtuse apex; aperture large, of a short oval form, and occupying about half the length of the body; outer lip thin, destitute of any thickening behind; colour yellowish-white, the body with three bands of squarish red-coloured spots. Length a twelfth of an inch; diameter two-thirds of its length.

Found by Mr. Alexander Murry, in shell sand, from the Bay of Cruden.

## 57. RISSOA GRACILIS.

*Rissoa gracilis*, Macgillivray, Moll. Ab., p. 152.

Shell thin, pellucid, glossy, turreted, subcylindrical; consisting of six moderately convex volutions, defined by a deep sutural line; aperture obliquely ovate, a little contracted above, occupying about a fourth of the entire length of the shell; outer lip complete, a little thickened externally; inner lip narrowly reflected on the columella, with a slight cavity behind; body ferruginous around the aperture; spire cream-white. Length somewhat more than the twelfth of an inch; diameter a fourth of its length.

In form it resembles *Rissoa striata*, but is more elongated, and is nearly allied to *Rissoa ruber*, which, however, is less attenuated with a rounded aperture.

Found by Miss Anne Macgillivray, in shell sand, on the beach between the estuaries of the Dee and Don, Aberdeenshire.

## GENUS TROCHUS.—(Page 18.)

## 14. TROCHUS MARTINI, pl. LVII, f. 11.

*Trochus Martini*, Brown, Wernerian Mem., VIII, p. 51, pl. 1, f. 26.

Shell conical; consisting of seven flat-sided volutions, well defined by the suture, and terminating in an acute apex; the whole covered with five or six tuberculated spiral ridges, which can only be distinctly seen by the aid of a strong lens, the lower ridge of each volution being more prominent than the others; base imperforate, flat, and a little concave, furnished with numerous tuberculate, concentric ridges; whole surface citron or flesh-coloured, streaked with nearly equidistant, reddish-brown, irregularly-shaped spots; aperture subquadrate, compressed, and nacreous within.

First discovered by Major Martin, of Mayville, Ayrshire; it has since been dredged by Mr. Smith, of Jordan Hill, in the Kyles of Bute; by Professor Forbes, off the Isle of Man; and near Dublin, by Mr. Alder, of Newcastle; and is said to have been found on the Aberdeenshire coast.

## 5. TROCHUS PERFORATUS, p. 18, pl. LVII, f. 9, 10.

## GENUS TORNATELLA.—(Page 21.)

## 2. TORNATELLA PELLUCIDA.

*Tornatella pellucida*, Macgillivray, Moll. Ab., p. 158.

Shell ovate, very thin, diaphanous, and glossy, conical, somewhat fusiform; volutions divided by a well defined sutural line, nearly flattened on the sides, and tapering to a sharp apex, and are longitudinally striulated, and spirally striated; body nearly twice as broad as the length of the spire, more deeply striated at the base and towards the suture, where there are two punctulate impressed lines, the basal striæ minutely crenulate; edge of the volutions simply incurved; aperture oblong, narrow, the superior angle being considerably contracted by the convexity of the lower volution of the spire; outer lip extremely thin; columella with an obscure plait; colour cream-white, with two faint reddish bands on the body. Length somewhat more than an eighth of an inch; diameter more than half its length.

"It closely resembles a young *Tornatella fasciata*, but differs in having the spire longer and more pointed, in wanting the channel in the suture formed by the involution of the spiral turns, in having two impressed lines near the posterior margin of the turns, and in being differently coloured. The three reddish bands, however, are analogous to the reddish spaces between the white bands in *Tornatella fasciata*."

Found in the Bay of Aberdeen, by Professor Macgillivray.

## 3. TORNATELLA PUSILLA.

*Tornatella pusilla*, Macgillivray, Moll. Ab., p. 158; *Voluta fusiformis*, Turton, Conch. Dict., p. 259.

Shell very thin, transparent, glossy, ovate, conical, and sub-fusiform; spire with three distinctly divided, slightly convex volutions, tapering to an obtuse apex; body about twice as broad as the length of the spire, with three spiral, punctulate striæ, which are strongest below, obsolete and distant on the upper two-thirds, crowded towards the suture; aperture oblong, narrow, considerably contracted at its upper extremity, by the convexity of the lower volutions; outer lip extremely thin; columella with an inconspicuous, oblique, obtuse plait or nodosity, terminating the inner lip; colour cream-white. Length one-twelfth of an inch; breadth half the length.

"This species has the spire shorter than *Tornatella fasciata* and *Tornatella pellucida*. It seems to agree in most respects with Turton's *Voluta fusiformis*, but differs in being only a third of the size, and spirally striate."

## GENUS JAMINIA.—(Page 21.)

## 10. JAMINIA SCALARIS.

*Odostomia scalaris*, Macgillivray, Moll. Ab., p. 154.

Shell thin, transparent, and glossy, ovately conical; consisting of five faintly striated, moderately convex volutions, well defined by a canaliculate suture, towards which the superior margin is suddenly inflexed; aperture ovate, occupying nearly the whole length of the body; outer lip thin; columellar lip somewhat inflexed, and terminating in a prominent plait on the columella; colour cream-white. Length not a twelfth of an inch; breadth half its length.

Macgillivray says "this species differs from all the others, in having the pillar lip inflexed, in wanting the umbilicus, and in the subscalar form of the spire."

Found by Professor Macgillivray, in shell sand, between the estuaries of the Dee and the Don, Aberdeenshire.

## 11. JAMINIA PLICATULA.

*Odostomia plicatula*, Macgillivray, Moll. Ab., p. 156.

Shell conical, ovate; consisting of five deeply defined, rather thick, opaque, glossy, flat-sided volutions, covered with longitudinal, fine, plicated striæ, which terminate about the centre of the body volution, and are succeeded by three or four spiral striæ, the lower portion of the body plain; aperture occupying not quite half the length of the body, ovate, subangular below, and somewhat acute above; outer lip rather thin; columellar lip provided with a slight plait. Length not quite the twenty-fourth of an inch; diameter about half its length.

"Similar to *Jaminia interstriata*, but differing in having the volutions more flattened, the plicæ more numerous, the columellar plait smaller, and in having the spiral striæ on the body."

Found by Professor Macgillivray, among shell sand, on the beach near the Broadhill, Aberdeenshire.

#### 12. JAMINIA MARIONÆ.

*Odostomia Marionæ*, Macgillivray, Moll. Ab., p. 156.

Shell thin, diaphanous, glossy, conical, ovate; with five volutions, which are finely plicated longitudinally, and delicately striated spirally; the superior edge of each volution in the form of a plaited rib; aperture ovate, occupying nearly the entire length of the body; outer lip slightly thickened, not reflexed on the pillar, but ending in a very slight plait behind the umbilicus, which is very small; colour cream-white. Length the twenty-fourth of an inch; diameter half its length.

"The peculiar markings of this species render it one of the most easily recognised of the genus. The tooth is so little apparent, were not the peristome incomplete for a short space, it might be referred to the genus *Rissoa*, to which it forms the transition."

Found by Professor Macgillivray, in shell sand, between the estuaries of the Dee and Don.

#### 13. JAMINIA ANNÆ.

*Odostoma Annæ*, Macgillivray, Moll. Ab., p. 157.

Shell thick, opaque, glossy, white, oblong, turreted; spire consisting of four flat-sided volutions, which are divided by a shallow sutural line; body convex, and proportionably large; aperture ovate, nearly a third of the whole length; outer lip thin; the inner lip somewhat inflexed, and terminating in a small plait on the columella, opposite the slight umbilicus. Length the twenty-fourth of an inch; diameter a third of its length.

Distinguished from all the others by its peculiar form.

Found by Miss Anne Macgillivray.

#### 14. JAMINIA OBLONGA.

*Odostomia oblonga*, Macgillivray, Moll. Ab., p. 157.

Shell oblong, subcylindrical, gradually tapering to an obtuse apex; spire with four flat-sided volutions, divided by a deep sutural line, the three superior ones smooth, the lower one, together with the body, with numerous, fine, longitudinal ribs; aperture ovate, a fourth of the whole length; the outer lip terminating about the middle of the columella, in a prominent plait, running into the interior. Length scarcely a twenty-fourth of an inch; diameter a third of its length.

"Very similar in form and markings to *Rissoa* (*Pyramis*) *truncata*; but not a third of the size, and having the essential character of an *Odostomia*." (*Jaminia*.)

### GENUS NATICA.—(Page 24.)

#### 7. NATICA HELECÖIDES, pl. XIII, f. 24, 25.

*Natica helecöides*, Johnstone, Trans. Berwick Club, 1835, p. 266; Lyell, Phil. Mag., s. 3, v. XVI, p. 365, f. 12; Jeffreys, Ann. and Mag. Nat. Hist., VIII, p. 165.

Shell thin, ovate; body large, inflated; spire small, consisting of three rather tumid volutions, well defined by the sutural line, and terminating in a somewhat obtuse apex; aperture oblong-ovate, oblique; outer lip thin, and sharp at the edge; inner lip narrow, with a simple umbilical line behind; whole surface covered with a very thin epidermis, of a pale yellowish-white. Length nearly three-eighths of an inch; breadth about a quarter.

Found on the Berwickshire coast, by Dr. Johnstone; in the Frith of Forth, by my friend Dr. Knapp, of Edinburgh, from whose specimen I took my figure; and Mr. Jeffreys found it by dredging in Lerwick Sound, Zetland.

#### 8. NATICA NITIDA, pl. XIII, f. 7, 11.

*Natica mammilla*, First Ed., pl. 43, f. 7, 11; Maton and Rackett, p. 225; *Nerita nitida*, Donovan, IV, pl. 144; Montagu, Sup., p. 149; *Natica nitida*, Fleming, p. 319.

Shell subovate, white, very glossy, and smooth; body very large, inflated; spire small, consisting of four slightly rounded volutions, with a very slight sutural line, a little flattened towards the margin, terminating in an acute apex; aperture a little oblique, semilunar, rounded both above and below; outer lip thin at the edge; inner lip narrow; umbilicus striated internally, and almost entirely filled by a callus process; whole surface with extremely fine, nearly obsolete striæ, which can only be seen by the aid of a strong lens. Length upwards of three-eighths of an inch; breadth a quarter.

Found near Caithness; the Friths of Forth and Clyde.

#### 9. NATICA RUTILA.

*Natica rutila*, Macgillivray, Moll. Ab., p. 126.

Shell thick, glossy, subglobose, its breadth more than its length; spire short, consisting of three spirally striate, much inflated volutions, with a narrow, channelled suture, which is margined by a white band; body ventricose; aperture subovate, and placed obliquely, its inner side nearly straight; outer lip thin; inner lip thickened; umbilicus strongly sulcated; where it is somewhat reflexed, but not prominent; external surface of a dull greyish-red, base of a paler hue; inside reddish-white; operculum semicircular, cornuous, and spirate.

This species seems intermediate between *Natica monilifera*, and *Natica rufa* of Montagu.

Found by Mr. Alexander Murray, at Frazerburgh.

#### 10. NATICA SQUALIDA.

*Natica squalida*, Macgillivray, Moll. Ab., p. 128.

Shell thick, subglobose; body large; spire small, depressed, with two and a half inflated, spirally striated volutions, terminating in an obtuse apex, defined by a subcanaliculate suture; aperture ovate, somewhat angulated below, oblique, and double the length of the spire; inner lip reflected over the columella, but very thin, and leaving rather a deep fissure in the umbilical space, on which there is no callosity; colour yellowish-white. Length three and a half twelfths of an inch; breadth three-twelfths.

This species "bears a great affinity to *Natica helicoides*, of

which it may possibly be merely a variety. The specimen, however, presents characters perfectly distinct from it."

Found by Miss Anne Macgillivray, among corallines brought up from deep water off Aberdeen.

#### GENUS TESTACELLA.—(Page 54.)

ANIMAL with an elongated body, narrowed in front, and provided with two divergent grooves, issuing from the fore part of the mantle, and terminating at the head; mantle small, covered with an auriform shell, situate on the hinder part of the body.

##### 1. TESTACELLA HALIOTOIDEA, pl. LIX, f. 17.

*Testacellus Haliotoides*, Férussac, Hist. Moll., pl. 8, f. 5; *Testacella Haliotoidea*, Drapernaud, pl. 8, f. 44, 45; Thompson, Ann. and Mag. Zool. and Bot., VI, p. 19; Ib., Mag. Nat. Hist., VII, p. 226, f. 39.

ANIMAL with cylindrical tentacles; grey, yellowish, or pale reddish; spotted on the sides beneath in some specimens; body elongate, tapering from the shield to the head.

Found in a garden, at Lambeth, by Mr. Sowerby.

#### GENUS LIMAX.—Férussac.—(Page 55.)

ANIMAL with an elongated, lanceolate, granular body, carinated behind; mantle shield-shaped, ovate, concentrically lined, entirely enveloping the shell; end of the tail tapering, and destitute of a gland; pulmonary cavity situated in front of the body, respiratory orifice towards the hinder part of its edge, or behind the middle; infracesophageal ganglion provided with two fissures below, presenting on each side of the medial line three gangliform prominences.

The following is the arrangement of the Rev. B. J. Clarke.

##### Section I.—Mantle produced behind, concentrically striate; tail partially carinated.

##### 1. LIMAX MAXIMUS, pl. LVIII, f. 3.

*Limax Maximus*, Thompson, Ann. and Mag. Nat. Hist., VI, p. 18; Clarke, Ib., XII, p. 333, pl. 10, f. 1, 2; *Limax maculatus*, Müller, p. 8; Drapernaud, p. 124, pl. 7, f. 10.

ANIMAL ash-coloured, spotted or immaculate; tentacles venous-coloured; keel long, white, and acute; mantle with its hinder extremity produced, shield-shaped; skin with small, linear rugosities, converging towards the caudal extremity.

Variety 1. Drapernaud; pl. LVIII, f. 3. *Shield spotted; back with black, longitudinal, broad lineations.*

Variety 2, pl. LVIII, f. 3. *Ash-coloured and black.*

*Cinereo-niger*, Nilsson, p. 7.

##### 2. LIMAX ARBOREUS, pl. LIX, f. 9, 10, 11, 12, 13.

*Limax arboreus*? M. Bouchard Chantreux, Cat. des Moll. terres. et fluv. du Pas de Calais; *Limax glaucus*, Clarke, Ann. and Mag. Nat. Hist., XII, p. 334, pl. 11, f. 4 to 10.

ANIMAL whitish-yellow, smooth, and variegated; shield with two black, dorsal bands; tentacles obscure.

Found on trees covered with moss; the Ash and Elm seem a favourite resort.

##### Section II.—Mantle rounded behind, and concentrically striate; end of the tail carinated.

##### 3. LIMAX FLAVUS, pl. LIX, f. 7, 8.

*Limax flavus*, Drapernaud; Clarke, Ann. and Mag. Nat. Hist., XII, p. 338, pl. 11, f. 11, 12; *Limax variegatus*, Férussac.

ANIMAL yellowish, spotted with brown; the tentacles azure-blue; mantle mottled with yellow; body more or less spotted with yellow, and the sides pale yellow.

Found in cellars and damp ground floors, and rarely upon trees.

##### Section III.—Mantle truncated behind, concentrically striate; end of tail carinated.

##### 4. LIMAX AGRESTIS, pl. LIX, f. 16.

*Limax agrestis*, Linn. Syst. Nat., II, p. 1082; Nunneley, Local Cat., pl. 1, f. 4; Thompson, Ann. and Mag. Nat. Hist., VI, p. 19; Clarke, Ib., XII, p. 338, pl. 12, f. 13.

ANIMAL grey or reddish, frequently spotted with brown; body with interrupted furrows, and provided with a short, oblique carina; mantle large, ovate, rounded behind, and concentrically striate.

Inhabits fields and open situations.

##### Section IV.—Mantle truncated behind, granulated or shagreened; back carinated from the mantle to the extremity.

##### 5. LIMAX SOWERBII, pl. LVIII, f. 6, and pl. LIX, f. 14.

*Limax Sowerbii*, Férussac, Hist. Moll., pl. 8 D, f. 7; Alder, Mag. Zool. and Bot., II, p. 105; Clarke, Ann. and Mag. Nat. Hist., XII, p. 338, pl. 12, f. 14, 15.

ANIMAL pale yellow, tessellated with brown, head and tentacles black; mantle granulated, with a furrow near its margin; dorsal keel amber-coloured, and very conspicuous; sides cream-white.

Found in open situations.

##### 6. LIMAX GAGATES, pl. LVIII, f. 4, 5, and pl. LIX, f. 2, 3, 4, 5, 6.

*Limax gagates*, Drapernaud, pl. 9, f. 1, 2; Clarke, Ann. and Mag. Nat. Hist., XII, p. 339, pl. 12, f. 16 to 22.

ANIMAL shining black; body with subrugose striae, the back carinated; mantle truncated posteriorly, and granulated; circumscribed by an elevated ridge, which meets in a point near the pulmonary orifice, making the upper portion of the mantle appear more prominent than the rest; back abruptly carinated its whole length from the mantle; when at rest the keel projects above the mantle, and forms a carinated ridge.

Variety 1. Férussac; pl. LVIII, f. 4, 5, and pl. LIX, f. 2. *Lead-coloured or greyish-black.*

Variety 2. Clarke. *Brown; with the sides of the mantle yellowish.*

Found by the Rev. B. J. Clarke, at Tourmakady Lodge, on the borders of Lough Mash, Ireland.

#### SUB-GENUS BULLÆA.—(Page 57.)

##### 3. BULLÆA CATENULIFERA.

*Bullæa catenulifera*, Macgillivray, Moll. Ab., p. 187.

Shell very thin, transparent, pure white, oblong, cylindrical, truncate above, wider and rounded below; aperture extending the whole length of the shell, narrowed above for about a fourth of its space, and then dilated into an oblong truncated form; outer lip very thin; columella exposed, and gently

waved; surface with regular, well defined, divergent, longitudinal, moniliform striæ, or presenting the appearance of two undulating lines intersecting each other, and faint lines of growth. Length a quarter of an inch; breadth an eighth.

Common in deep water, off Aberdeen.

#### GENUS 7.—HALIA.—Risso.

Shell subovate, spire short, convex, obtuse, volutions rapidly diminishing, separated by an impressed suture; body very large, tumid; aperture large, subovately-trigonal, acute above, curved below, and terminating in a rather wide notch; outer lip thin; inner lip formed by the thin-edged, sinous columella before, destitute of an umbilicus.

This genus to follow *UTRICULUS*, page 58.

##### 1. HALIA FLEMINGIANA.

*Halia Flemingiana*, Macgillivray, Moll. Ab., p. 189.

Shell thin, brittle, glossy, semitransparent, subovate; spire consisting of three convex volutions, separated by a distinct suture, and terminating in a very obtuse apex; aperture subovately-trigonal, two-thirds of the entire length, contracted above; outer lip with a thin margin, and forming the fourth of a circle; inner lip sinous, its superior half formed by the body-volution, the inferior by the thin flexous edge of the columella, the lower extremity curved to the left in a short and rather wide canal; colour pure white. Length upwards of half an inch; diameter half its length.

Found by Mr. James Smith, in deep water, off Aberdeen.

#### GENUS PATELLA.—(Page 63.)

##### 3. PATELLA FULVA, Müller, Zool. Dan., I, pl. 24, f. 1, 2, 3.

*Patella Forbesii*, page 64.

## CLASS CONCHIFERA.

#### GENUS PECTEN.—(Page 71.)

##### 16. PECTEN ISABELLÆ.

*Pecten Isabellæ*, Macgillivray, Moll. Ab., p. 225.

Shell ovate, rounded, nearly equivalve, slightly convex; having twenty-four slender, compressed, rounded ribs, with very numerous, thin-edged lamellæ, which towards the margin are elevated into triangular, compressed, acute spines; the interstices with transverse, scalar lamellæ; ears very unequal, being in length as one to two, with divergent sulci, transversely lamellate, and echinated; margins of the upper valves under the auricular process provided with four conical spines, and a series is continued on the surface to the umbo, which is smooth and glossy; colour white, lower valve tinged with pink. Length three-twelfths of an inch; breadth somewhat less.

"This most beautiful *Pecten* cannot be at all confounded with *Pecten varius* or *Pecten niveus*, to which it is allied in its mode of echination."

Found by Professor Macgillivray, among *Ascidæ* and coral-lines, from the Aberdeenshire coast.

#### GENUS MODIOLA.—(Page 77.)

##### 7. MODIOLA BALLII, pl. XXXVII, f. 36.

Shell transversely oblong-ovate; umbones placed very near to one side; a slight groove or furrow emanates from the umbones, and terminates in an oblique line on the margin of the anterior side, on which the colour is golden-yellow; covered with a very glossy, olivaceous epidermis, which in certain lights exhibits a metallic lustre; inside highly pearly, with transverse wrinkles towards the extremity; the surface exhibiting gold and coppery metallic reflections, and studded with a number of small circular pits, like those left by the small-pox.

Found at Yougal, by Robert Ball, Esq.

#### GENUS CYCLAS.—(Page 93.)

##### 5. CYCLAS CITRINA, pl. XXXVII, f. 37.

*Cyclas flavescens*? Macgillivray, Moll. Ab., p. 246.

Shell very thin, subdiaphanous, and slightly elliptical; very ventricose, a little inequilateral, nearly hemispherical; umbones large, prominent, inflated, and rounded; covered with a rather dull citron-coloured epidermis, beneath which the surface is irregularly and strongly striated concentrically, with two or three lines of growth.

Discovered by Thomas Glover, Esq., of Smedley Hill, Manchester, in the Leven, a little way below the Lake of Windermere, Westmorland. Length about two and a half eighths of an inch.

This shell differs from *Cyclas cornea*, in being more orbicular, in the umbones being much larger, more prominent, and bulging, and it never attains so large a size as that species.

#### GENUS PISIDIUM.—(Page 94.)

##### 7. PISIDIUM JOANNIS.

*Pisidium Joannis*, Macgillivray, Moll. Ab., p. 248.

Shell transversely-ovate, moderately convex, thin, glossy; both sides well rounded; umbones tumid, obtuse, with smooth beaks, and placed nearest the anterior side; whole surface with numerous, concentric striæ, the intervening furrows broader, smooth, and glabrous, with several well marked lines of growth; hinge line a little arcuated; colour greyish-yellow. Length two-twelfths of an inch; breadth two and a half twelfths.

Found by Mr. Leslie, in a ditch and pond of the Professor of Medicine, and afterwards by Professor Macgillivray, in a ditch near the Links of Old Aberdeen, where it is very abundant.

##### 8. PISIDIUM JENYNSII.

*Pisidium Jenynsii*, Macgillivray, Moll. Ab., p. 249; *Pisidium pulchellum*, var., Jenyns.

Shell transversely and obliquely ovate, somewhat tumid, very thin, and glossy; with regular, distinct, concentric striæ, a few more conspicuous lines of growth, and very faint radiating striulæ; umbones tumid, obtuse, considerably nearer the anterior side, which forms about a third of the segment of a circle,



its slope being convex, and about a third shorter than the posterior side; colour cream-white. Breadth nearly two-twelfths of an inch; length not quite a twelfth.

Found among the roots of aquatic plants, in a ditch between Aberdeen and Spital.

GENUS PSAMMOBIA.—(Page 101.)

8. PSAMMOBIA FLORIDA, pl. XXXIX, f. 30.

*Psammobia florida*, Turton, Biv., p. 86, pl. , f. 6.

Shell transversely oblong-ovate, rather convex, equally rounded at both sides; hinge with a single cleft tooth in one valve, with a pit on each side for the reception of two teeth in the opposite valve; surface smooth, with close-set, concentric striæ, and minute longitudinal ones; variously marked with transverse zones of red or yellow, and longitudinally radiated; inside varying from pale yellow to rich reddish-lilac. Length half an inch; breadth one inch.

Inhabits the Western coast of England, and the Eastern of Ireland.

9. PSAMMOBIA COSTULATA, pl. XXXIX, f. 34.

*Psammobia costulata*, Turton, Biv., p. 87, pl. 6, f. 8.

Shell transversely oblong-oval, thin, slightly angular at the anterior end, where there are about twelve fine, divergent, longitudinal ribs emanating from the umbones, which are straight, a little prominent, and nearly central; whole surface with very minute, longitudinal, and somewhat more open transverse striæ; colour varying from pale yellow to deep purple, and marked with blotches and stripes of pale crimson; hinge with a slightly cleft tooth in one valve, locking between two in the other, one

of which is slightly cloven; inside same colour as the external surface, but more vivid. Length half an inch; breadth an inch.

Found at Torbay and the Irish Channel.

GENUS SPHENIA.—(Page 104.)

4. SPHENIA COSTULATA.

*Sphenia costulata*, Macgillivray, Moll. Ab., p. 301.

Shell convex, very thin, subdiaphanous and glossy, transversely-ovate, equally rounded at both sides, the anterior one considerably shorter; umbones small, and slightly protruding; whole surface with faint, concentric striæ, and with about fifteen slightly elevated, radiating ribs; tooth thin, and of an elongated lamellar form; colour white. Length a twelfth of an inch; breadth a twelfth and a half.

Found among shell sand, from the Bay of Cruden, by Mr. Murray.

GENUS 1.—STYLIFER.—Broderip.

Shell thin, pellucid, turbinated; spire narrow, its apex a little off the perpendicular; aperture wide below, and narrowed above, with an acute termination.

The shells of this genus burrow in the rays of star fish.

1. STYLIFER ASTERICOLA, p. 10, pl. X, f. 40, 41.

*Phasianella stylifera*.

The genus Stylifer is now transferred to the family Serpulacea, but we have great doubts as to this being its proper situation in the system.

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28, 29. <i>Margarita margaritacea</i>				(4, 14, 15, 16, and 23, varieties;		(1, the operculum.)	
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30, 31. <i>Margarita olivacea</i> .....				apex decollated; 26, variety <i>b</i>		var. <i>rhombeus</i> of Turton .	32
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17 and 128				40. <i>Lymnæa peregra</i> .....	29	7, 8, 9. <i>Planorbis lævis</i> .....	31
35. <i>Lacuna quadrifasciata</i> .....				(8, 9, 10, 11, 36, and 38, variety		10, 10. <i>Planorbis imbricatus</i> ...	31
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2. <i>Cytherea Chione</i> .....	91	20, 21. <i>Tellina elliptica</i> .....	101	Plate XLVII.		1, 2, 3, 22. <i>Balanus Scoticus</i> ..	121
3. <i>Cytherea minima</i> .....	92	22. <i>Tellina pellucida</i> .....	101	1. <i>Hiatella minuta</i> .....	103	(2 and 3, the operculum.)	
4. <i>Cytherea minuta</i> .....	92	23. <i>Tellimya substriata</i> .....	107	2, 2. <i>Solen vagina</i> .....	112	4, 7, 8, 21. <i>Balanus rugosus</i> ..	120
5, 6. <i>Pullastra decussata</i> .....	88	24. <i>Crassina corrugata</i> .....	96	2.* <i>Solen Ligula</i> .....	112	(7 and 8, the operculum; 21, an	
7. <i>Pullastra vulgaris</i> .....	89	25. <i>Mactrina triangularis</i> .....	108	3, 3.* <i>Solen siliqua</i> .....	112	elongated variety.)	
8, 9. <i>Pullastra virginea</i> .....	89	26, 27. <i>Myatella Moutagui</i> ..	111	4. <i>Solen pellucidus</i> .....	113	5, 6, 13, 20. <i>Balanus punctatus</i> ..	121
10. <i>Pullastra perforans</i> .....	89	Plate XLI.		5, 12, 13. <i>Pandora rostrata</i> ..	104	(5 and 6, the operculum; 20, an	
11. <i>Venus ovata</i> .....	91	1. <i>Mactra glauca</i> .....	107	6, 7. <i>Azor antiquatus</i> .....	113	elongated variety.)	
12, 13. <i>Venus reflexa</i> .....	91	2. <i>Mactra stultorum</i> .....	107	8, 9, 9.* <i>Solenocurtus Legu-</i>		8,* 9,* 17. <i>Balanus balanoides</i> ..	120
14, 15. <i>Venus laminosa</i> .....	90	3, 4. <i>Mactra solida</i> .....	108	men .....	113	(8* and 9,* the operculum.)	
Plate XXXVIII.		5. <i>Mactra truncata</i> .....	108	10, 10.* <i>Solen Ensis</i> .....	113	9, 10, 11, 12. <i>Balanus Cranchii</i> ..	121
1. <i>Crassina Danmoniensis</i> ..	95	6. <i>Mactra elliptica</i> .....	108	14, 16. <i>Saxicava rugosa</i> .....	103	(11 and 12, the operculum.)	
2. <i>Crassina depressa</i> .....	96	7. <i>Mactra subtruncata</i> .....	108	15. <i>Hiatella oblonga</i> .....	103	14, 15, 16. <i>Balanus spongicola</i> ..	121
3. <i>Crassina elliptica</i> .....	96	8, 9. <i>Mactra dealbeta</i> .....	107	Plate XLVIII.		(14 and 15, the operculum.)	
4, 5. <i>Crassina compressa</i> .....	96	10. <i>Mactra striata</i> .....	108	1, 2, 3, 4, 5. <i>Pholas crispata</i> ..	114	23. <i>Balanus communis</i> .....	120
6, 7, 8. <i>Crassina striata</i> .....	96	11, 12. <i>Mactra triangulata, Fo-</i>		6, 7, 8, 9, 10. <i>Pholas caudida</i> ..	115	24, 25, 26. <i>Balanus Moutagui</i> ..	121
9. <i>Crassina Scotica</i> .....	95	reign .....	—	11, 12. <i>Pholas parva</i> .....	115	(26, the operculum.)	
10. <i>Crassina sulcata</i> .....	96	Plate XLII.		13, 14. <i>Gastrochaena Pholadia</i> ..	116	27, 28, 29. <i>Pyrgoma Anglica</i> ..	120
11. <i>Cyprina vulgaris</i> .....	93	1. <i>Ligula prætenuis</i> .....	106	15, 16. <i>Saxicava rugosa, var.</i> ..	103	(28, the operculum.)	
12, 13. <i>Crassina ovata</i> .....	96	2. <i>Amphidesma tenue</i> .....	105	17, 18. <i>Pholas sulcata</i> .....	115	30. <i>Clitia verruca</i> .....	122
Plate XXXIX.		3. <i>Amphidesma Boysii</i> .....	105	Plate XLIX.		Plate LIV.	
1, 2. <i>Lucina undata</i> .....	98	4. <i>Amphidesma truncata</i> .....	106	1, 2, 3. <i>Pholas dactylus</i> .....	115	1. <i>Balanus communis</i> .....	120
3. <i>Lucina lactea</i> .....	98	5. <i>Amphidesma prismatica</i> ..	105	4, 6, 7, 9. <i>Pholas papyracea</i> ..	114	2, 3. <i>Balanus costatus</i> .....	120
4, 5, 5,* 6, 7. <i>Cryptodon flexuo-</i>		6. <i>Corbula rosea</i> .....	105	5, 8. <i>Pholas striata</i> .....	115	4, 5. <i>Balanus balanoides</i> .....	120
sus .....	99	7, 8, 9. <i>Corbula nucleus</i> .....	105	10, 11. <i>Pholas lamellata</i> .....	114	6, 13, 14. <i>Balanus rugosus</i> ..	120
(5,* hinge; 6 and 7, var.)		10, 11. <i>Tellimya lactea</i> .....	106	12, 13. <i>Pholas tuberculata</i> .....	115	(13 and 14, the operculum.)	
8, 9. <i>Lucina radula</i> .....	98	12, 13. <i>Tellimya tenuis</i> .....	106	Plate L.		7. <i>Balanus conoides</i> .....	121
10. <i>Capsa complanata</i> .....	97	14, 15. <i>Tellimya suborbicularis</i> ..	106	1, 2, 3, 4, 5, 6, 7. <i>Teredo</i>		8, 9, 10, 11, 12. <i>Balanus can-</i>	
11. <i>Donax trunculus</i> .....	97	16, 23, 24. <i>Sphenia Swainsoui</i> ..	104	navalis .....	116	didus .....	121
12. <i>Capsa castanea</i> .....	97	17, 18, 22. <i>Sphenia Binghami</i> ..	104	(1 <i>b</i> , section of the lower end of		(8, an elongated variety; 11 and	
13. <i>Donax ruber</i> .....	97	19. <i>Tellimya elliptica</i> .....	106	the tube; 2, an entire tube,		12, the operculum.)	
14, 15. <i>Myrtea spinifera</i> .....	98	20, 21. <i>Tellimya glabra</i> .....	107	with the bivalve seated on its		Plate LV.	
16, 17, 18. <i>Cyclas rivicola</i> ..	93	25, 26, 26.* <i>Mactrina minutis-</i>		wider extremity; 3, 4, and 5,		1, 5. <i>Serpula triquetra</i> .....	123
17.* <i>Modiola rhombea</i> .....	78	sima .....	108	different views of the bivalve;		2, 3. <i>Serpula vermicularis</i> ..	123
19. <i>Cyclas cornea</i> .....	93	27. <i>Anatina arctica</i> .....	—	6 and 7, different views of the		4. <i>Serpula contorta</i> .....	122
20. <i>Cyclas lacustris</i> .....	94	28. <i>Thracia truncata</i> .....	110	spoon-shaped appendage.)		6. <i>Serpula spiralis</i> .....	122
21. <i>Cyclas calyculata</i> .....	94	29, 30, 31. <i>Saxicava purpurea</i> ..	103	8, 9, 10, 11, 12, 13. <i>Xylopha-</i>		7. <i>Serpula perversa</i> .....	122
22. <i>Pisidium obliquum</i> .....	94	32, 33. <i>Corbula ovata</i> .....	105	ga dorsalis .....	117	8. <i>Serpula serrulata</i> .....	123
23. <i>Pisidium fontinale</i> .....	94	34, 35. <i>Modiola Ballii</i> .....	132	(11, 12, and 13, different views		9, 10. <i>Serpula tubularia</i> .....	122
24. <i>Pisidium obtusale</i> .....	94	Plate XLIII.		of the bivalve.)		Plate LVI.	
25. <i>Pisidium appendiculata</i> ..	95	1. <i>Lutraria Solenoidea</i> .....	109	14, 15. <i>Teredo nana</i> .....	116	1. <i>Dentalium Gadus</i> .....	117
26. <i>Pisidium nitidum</i> .....	95	2, 3. <i>Lutraria elliptica</i> .....	109	16. <i>Teredo maleolus</i> .....	116	2. <i>Dentalium octangulatum</i> ..	117
27. <i>Pisidium pusillum</i> .....	95	4. <i>Lutraria compressa</i> .....	109	Plate LI.		3. <i>Brochus glabrus</i> .....	125
28. <i>Pisidium cinereum</i> .....	95	Plate XLIV.		1. <i>Pentelasmis anseriferus</i> ..	119	4, 5. <i>Dentalium labiatum</i> ..	117
29. <i>Lucina leucoma</i> .....	99	1, 2, 10. <i>Magdala striata</i> .....	111	2. <i>Pentelasmis fascicularis</i> ..	120	6. <i>Brochus lævis</i> .....	125
30, 31. <i>Psammobia tellinella</i> ..	102	3. <i>Thracia convexa</i> .....	110			7. <i>Dentalium entalis</i> .....	117
32. <i>Psammobia Laskeyii</i> .....	103	4. <i>Thracia ovata</i> .....	110			8. <i>Dentalium dentalis</i> .....	117
33. <i>Psammobia polygona</i> .....	102						
34. <i>Psammobia costulata</i> .....	102						

FIG.	PAGE	FIG.	PAGE	FIG.	PAGE	FIG.	PAGE
9. <i>Brochus arcuatus</i> .....	125	56, 60. <i>Spirorbis lucidus</i> .....	124	11. <i>Unio pictorum</i> .....	82	30. <i>Neritina fluviatilis</i> .....	26
10. <i>Brochus trachiformis</i> .....	124	57. <i>Spirorbis heterocliticus</i> ...	123	( <i>a</i> , the foot; <i>b</i> , the upper sy-		31. <i>Physa hypnorum</i> .....	30
11. <i>Brochus reticulatus</i> .....	124	58. <i>Spirorbis conicus</i> .....	124	phon; <i>c</i> , the lower syphon.)		32. <i>Planorbis corneus</i> .....	31
12. <i>Brochus annulatus</i> .....	125	59. <i>Spirorbis striatulus</i> .....	124	12. <i>Pisidium obtusale</i> .....	94	33, 34, 35. <i>Paludina vivipara</i> .	26
13. <i>Brochus striatus</i> .....	125			( <i>a</i> , the syphon; <i>b</i> , the foot.)		(34, young; 35, the operculum.)	
14, 15. <i>Triloculina rotundata</i> .	2	Plate LVII.		13. <i>Cyclas coruea</i> .....	93	36. <i>Valvata piscinalis</i> .....	27
16, 17. <i>Renoidea oblonga</i> .....	3	SUPPLEMENTARY.		( <i>a</i> and <i>b</i> , the double syphon; <i>c</i> ,		37. <i>Ancylus fluviatilis</i> .....	59
18, 19. <i>Triloculina minuta</i> ...	2	1. <i>Pleurotoma Trevelianum</i> .	127	the foot.)		38. <i>Assiminea Grayana</i> .....	27
20, 21. <i>Triloculina glabra</i> .....	2	2. <i>Pleurotoma gracilis</i> .....	7			39. <i>Succinea amphibia</i> .....	35
22. <i>Mileola concentrica</i> .....	3	3, 4. <i>Patella fulva</i> .....	64	Plate LIX.		40, 53, 56. Spawn of <i>Lymnæa</i>	
23. <i>Biloculina elliptica</i> .....	2	5, 6. <i>Bulla punctata</i> .....	58	1. <i>Limax maximus</i> —Nilsson's		peregra, var. <i>ovata</i> .....	29
24. <i>Triloculina bicoruis</i> .....	2	7. <i>Scalaria Turtoni</i> .....	21	" <i>Cinereo Niger</i> " .....	131	41. Eggs of <i>Lymnæa peregra</i>	
25. <i>Biloculina marginata</i> .....	2	8. <i>Lacuna Montagu</i> .....	128	2, 3, 4, 5, 6. <i>Limax gagates</i> .	56	magnified .....	29
26. <i>Triloculina perforata</i> .....	2	9, 10. <i>Trochus perforatus</i> ...	18	(3 and 6, resting position; 4,		42. Spawn of <i>Succinea ampli-</i>	
27. <i>Triloculina striata</i> .....	2	11. <i>Trochus Martini</i> .....	129	young; 5, variety.)		bia .....	35
28. <i>Biloculina lactea</i> .....	2	12. <i>Fusus Boothii</i> .....	127	7, 8. <i>Limax flavus</i> .....	56	43. Eggs of <i>Succinea amphibia</i>	
29. <i>Lagena perlucida</i> .....	3	14. <i>Natica Alderi</i> .....	25	9, 10, 11, 12, 13. <i>Limax arbo-</i>		magnified .....	35
30, 31. <i>Lagena margiuata</i> .....	3	15. <i>Trichotropis accuminata</i> ...	126	reus .....	—	44. Eggs of <i>Helix Pomatia</i> .....	43
32. <i>Lagena squamosa</i> .....	3	16, 17. <i>Galericulum Otis</i> .....	24	(9 and 13, variety; 10 and 11,		45. Eggs of <i>Helix nemoralis</i> ...	43
33. <i>Lagena Urnæ</i> .....	3	18. <i>Buccinum carinatum</i> .....	126	resting position; 12, common		46. Eggs of <i>Planorbis contortus</i>	33
34, 35. <i>Lagena retorta</i> .....	3	19. <i>Fusus Babylonicus</i> .....	127	variety.)		47. Spawn of <i>Physa fontinalis</i> .	30
36. <i>Lagena striata</i> .....	3			14. <i>Limax Sowerbii</i> .....	131	48. Egg of <i>Physa fontinalis</i>	
37. <i>Lagena globosa</i> .....	126	Plate LVIII.		16. <i>Helix agrestis</i> .....	—	magnified .....	30
38, 39. <i>Biloculina oblonga</i> .....	2	1. 2. <i>Limax arboreus</i> .....	—	17. <i>Testacella Haliotoidea</i> .....		49. Spawn of <i>Planorbis corneus</i>	31
41, 42, 53, 54. <i>Spirorbis spiril-</i>		(2, young.)		54 and 131		50. Spawn of <i>Paludina impura</i>	27
lum .....	123	3. <i>Limax maximus</i> ...	55 and 131	18. <i>Helix aspersa</i> .....	43	51. Spawn of <i>Valvata cristata</i> .	28
43. <i>Spirorbis corneus</i> .....	124	4, 5. <i>Limax gagates</i> .....	56	19. Spiculum or dart .....		52. Spawn of <i>Paludina impura</i>	
44. <i>Spirorbis annulus</i> .....	124	6. <i>Limax Sowerbii</i> .....	131	20. Section of ditto .....		magnified .....	27
45. <i>Spirorbis Nautiloides</i> .....	123	7, 8. <i>Dreissina polymorpha</i> ...	76	21. Orifice of <i>Helix aspersa</i> ...	43	54. Spawn of <i>Lymnæa peregra</i>	
46. <i>Spirorbis corrugatus</i> .....	124	( <i>a</i> , the byssus; <i>b</i> , the lower sy-		22. <i>Helix caracolla</i> .....	—	magnified .....	29
47. <i>Spirorbis granulatus</i> .....	123	phon; <i>c</i> , the upper syphon;		23. <i>Helix cellaria</i> .....	51	55. Spawn of <i>Valvata obtusa</i> ...	—
48. <i>Spirorbis carinatus</i> .....	124	8, the lower syphon greatly		24. <i>Clausilia nigricans</i> .....	38	57. Spawn of <i>Planorbis margi-</i>	
49. <i>Cornuoides major</i> .....	125	magnified.)		25. <i>Helix nemoralis</i> .....	43	natus magnified .....	32
50. <i>Cornuoides minor</i> .....	125	9, 10. <i>Anodon Cygnea</i> .....	79	26. <i>Cyclostoma elegans</i> .....	34	58. Spawn of <i>Planorbis margi-</i>	
51. <i>Spirorbis minutus</i> .....	123	( <i>a</i> , the foot; <i>b</i> , the upper sy-		27. <i>Vitrina pellucida</i> .....	54	natus .....	32
52. <i>Spirorbis reversus</i> .....	124	phon; <i>c</i> , the lower syphon;		28. <i>Vertigo sexdentata</i> .....	41	59. <i>Lymnæa stagnalis</i> .....	28
55. <i>Spirorbis heterostrophus</i> ...	123	10, the lower syphon greatly		29. <i>Carycium minimum</i> .....	34	60. Eggs of <i>Limax rufus</i> .....	—
		magnified.)					

FINIS.





PLATE I.

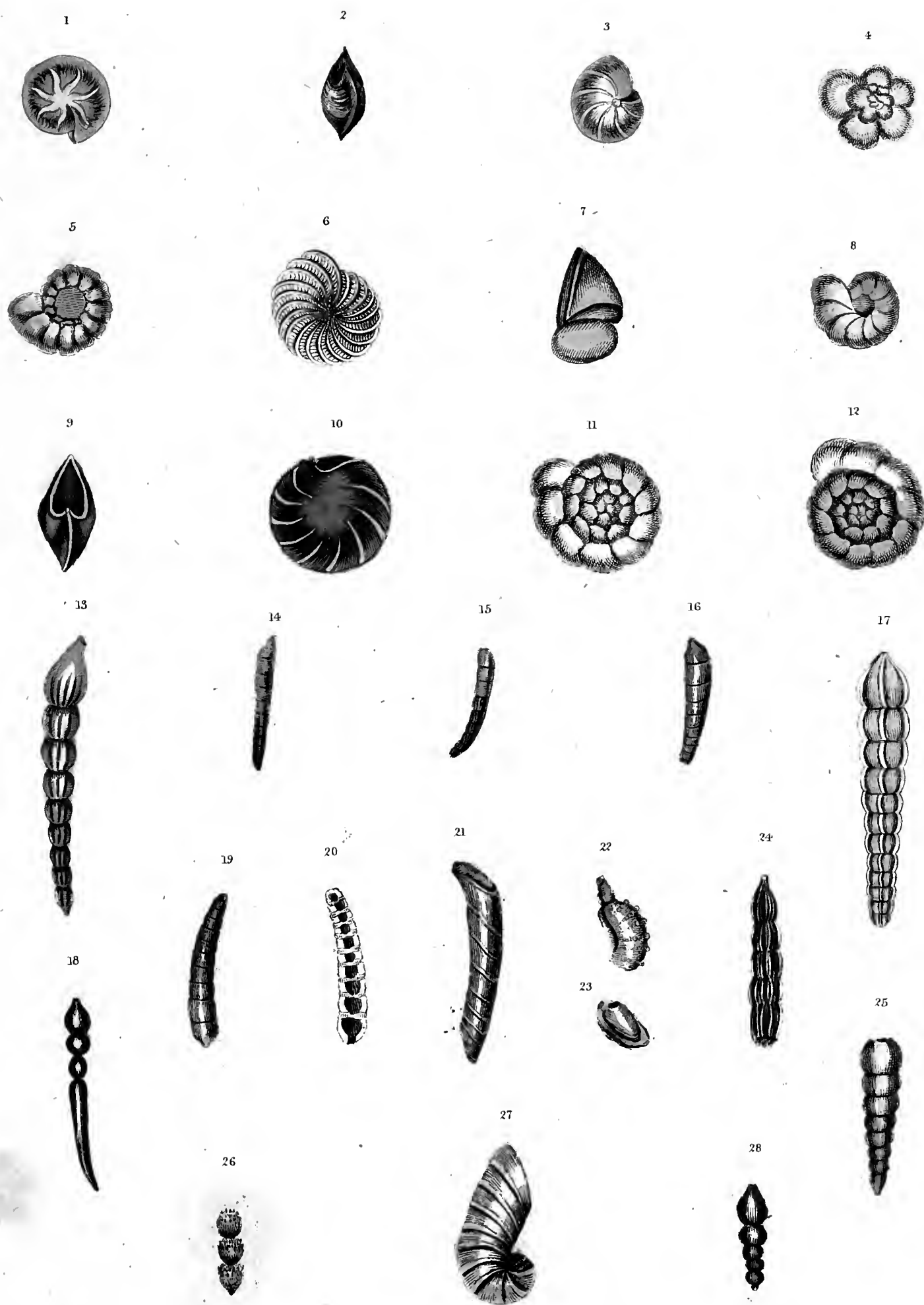
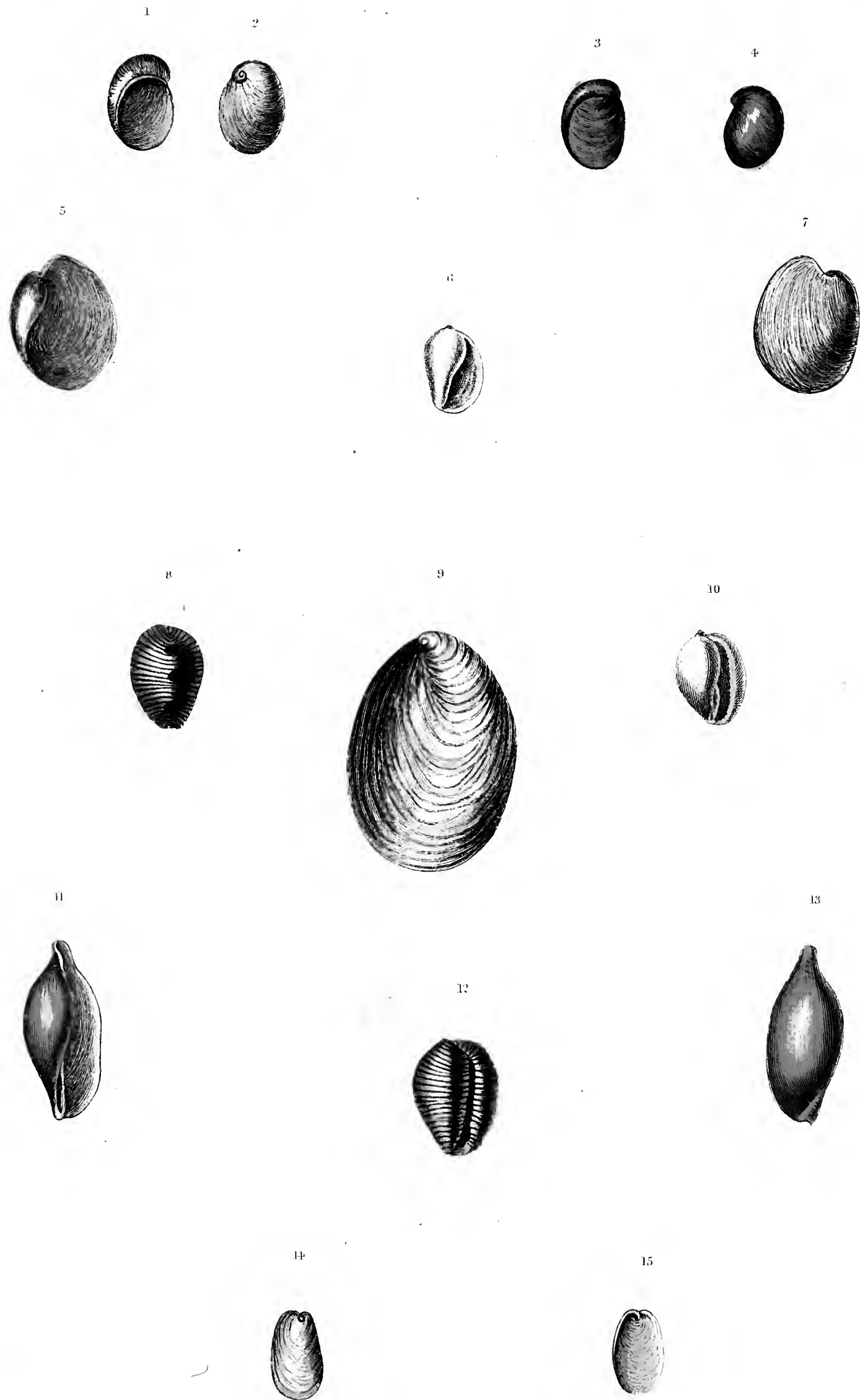




PLATE II.







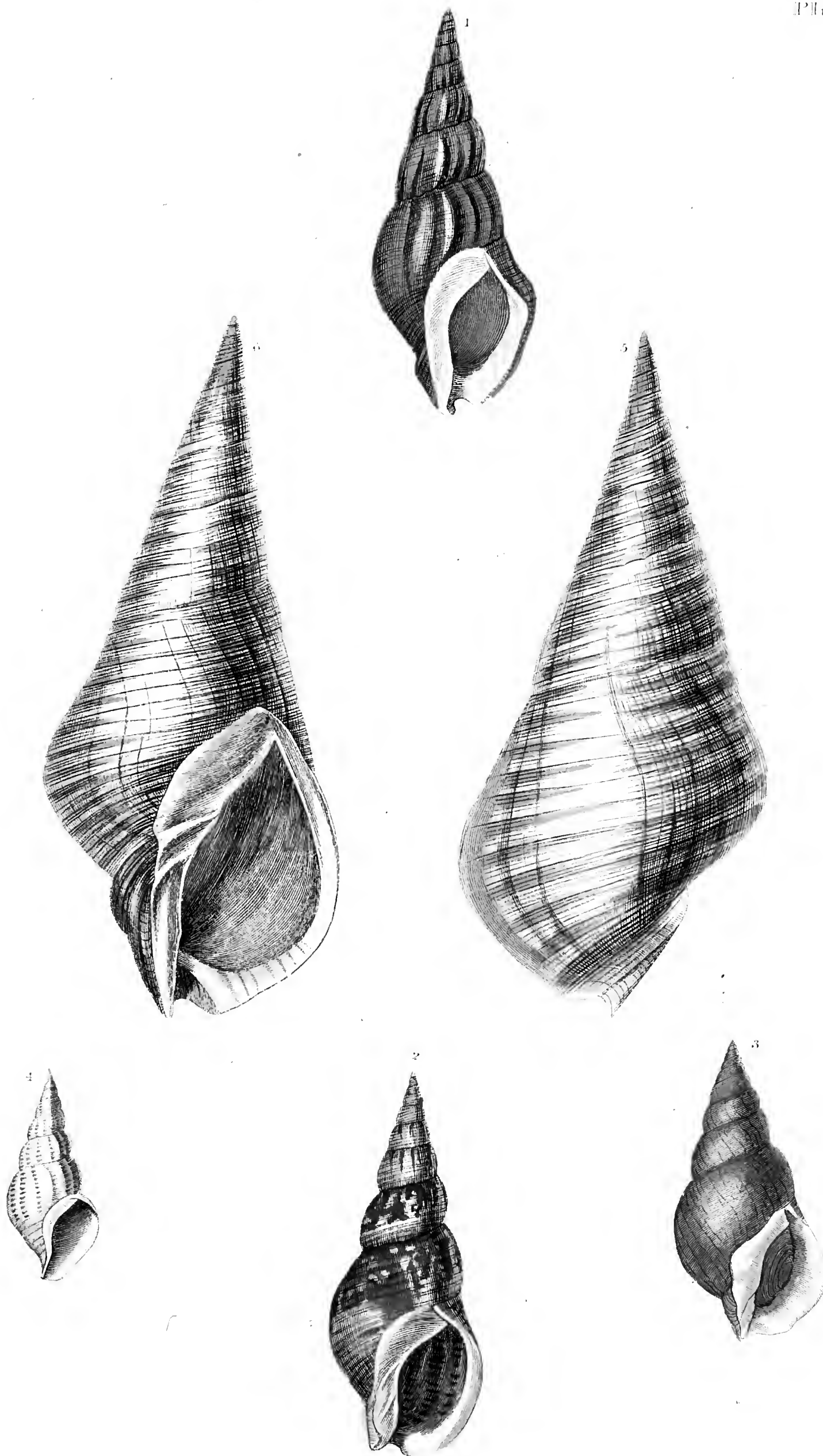




PLATE IV.

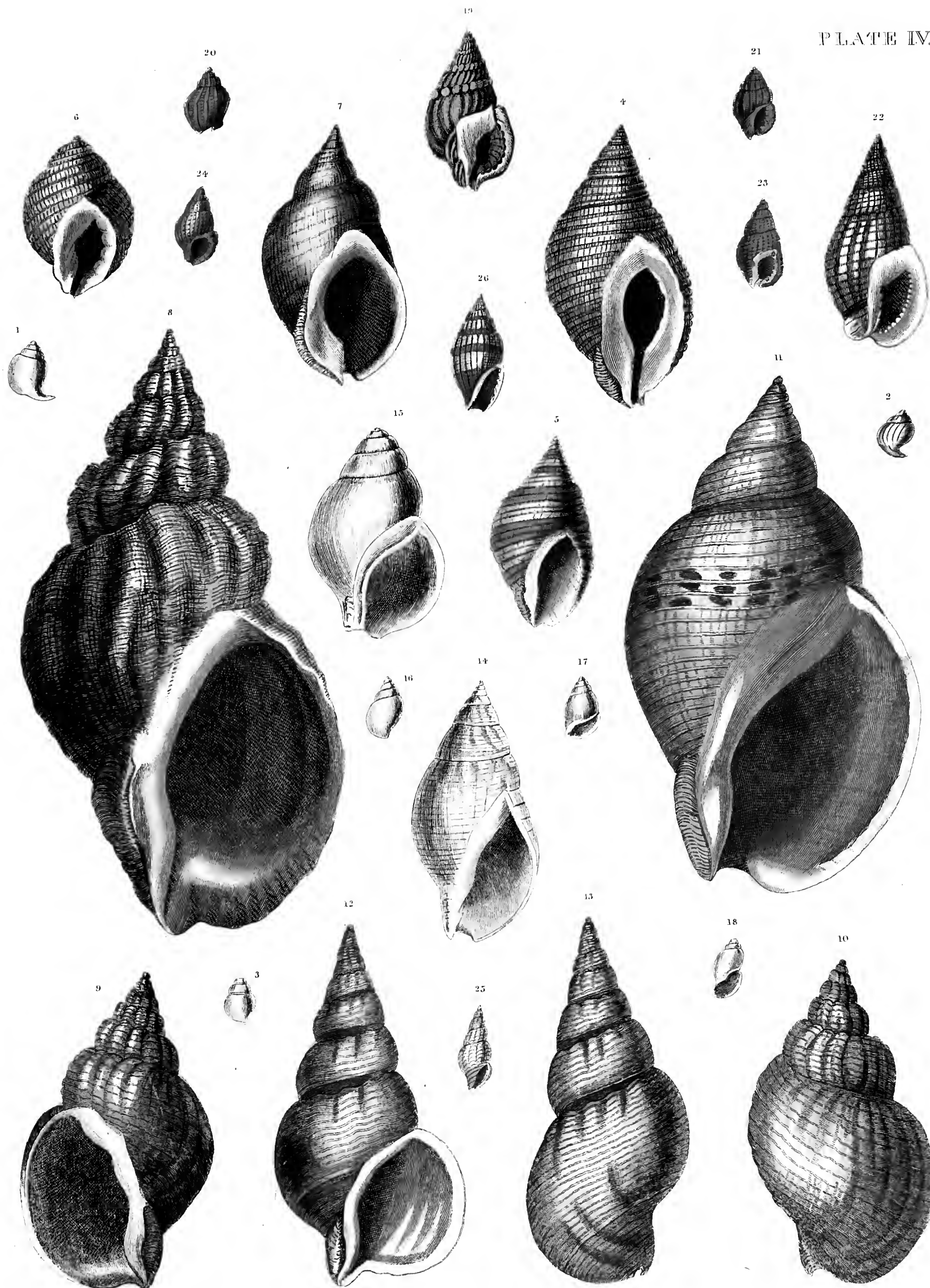
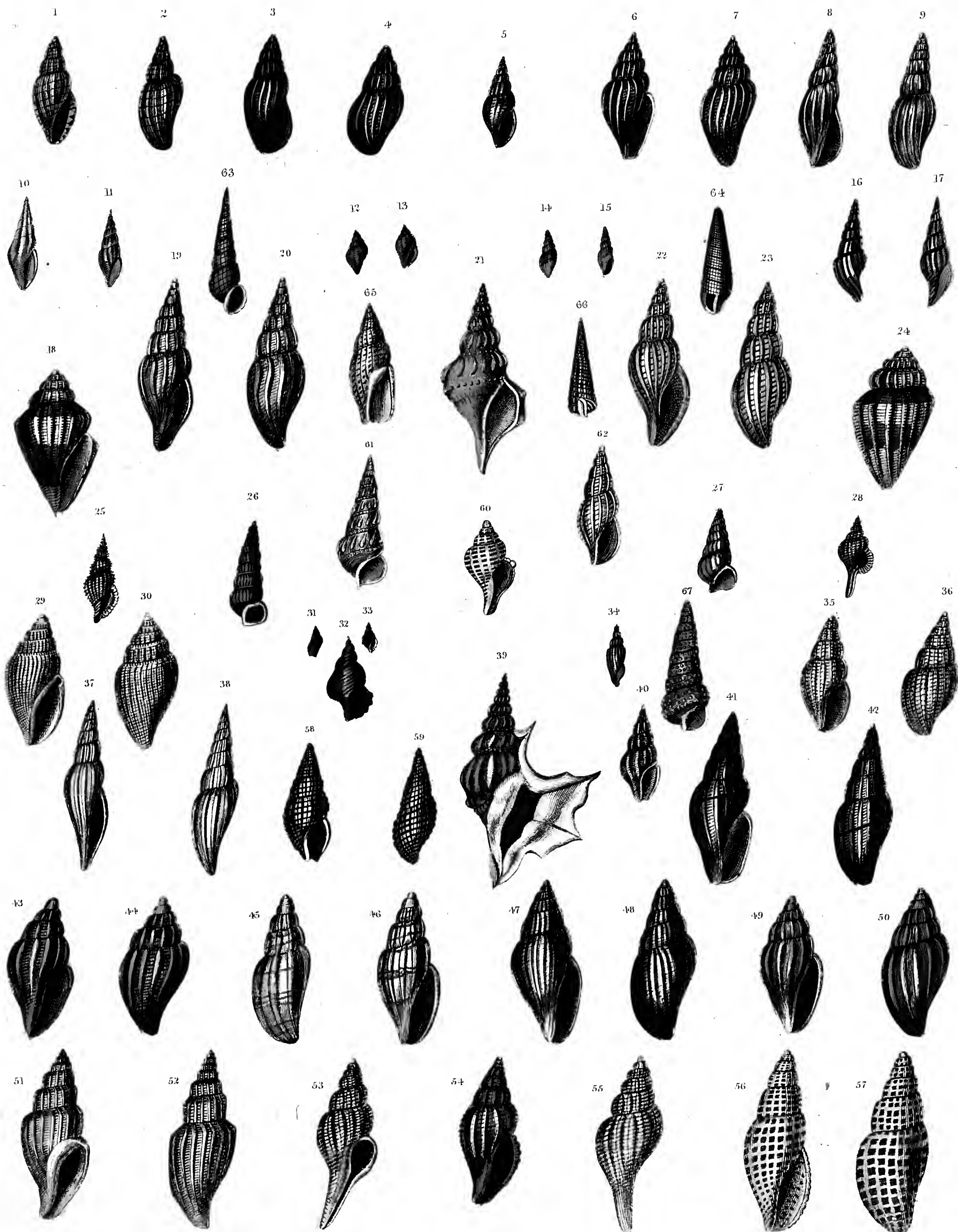






PLATE V.





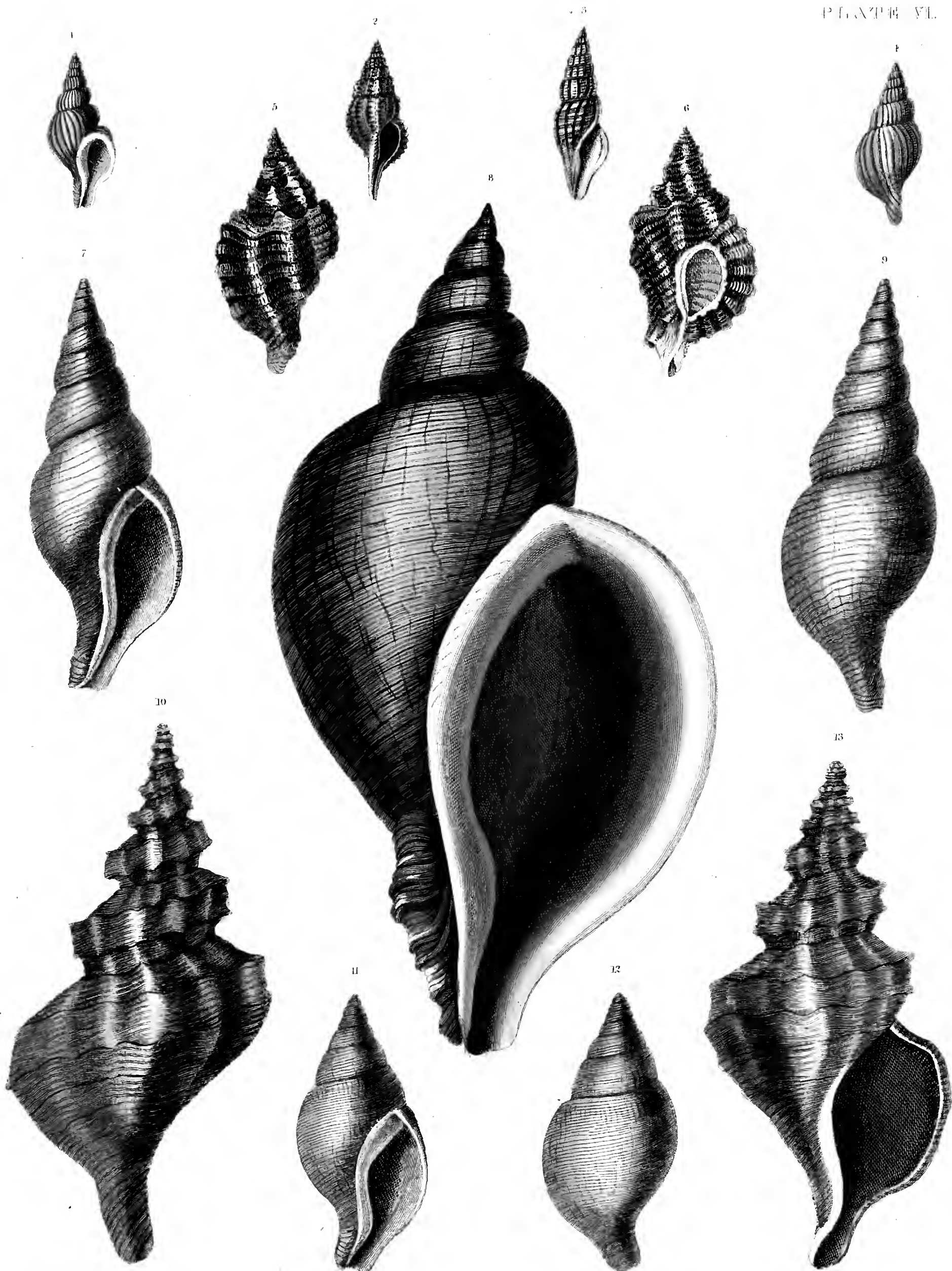
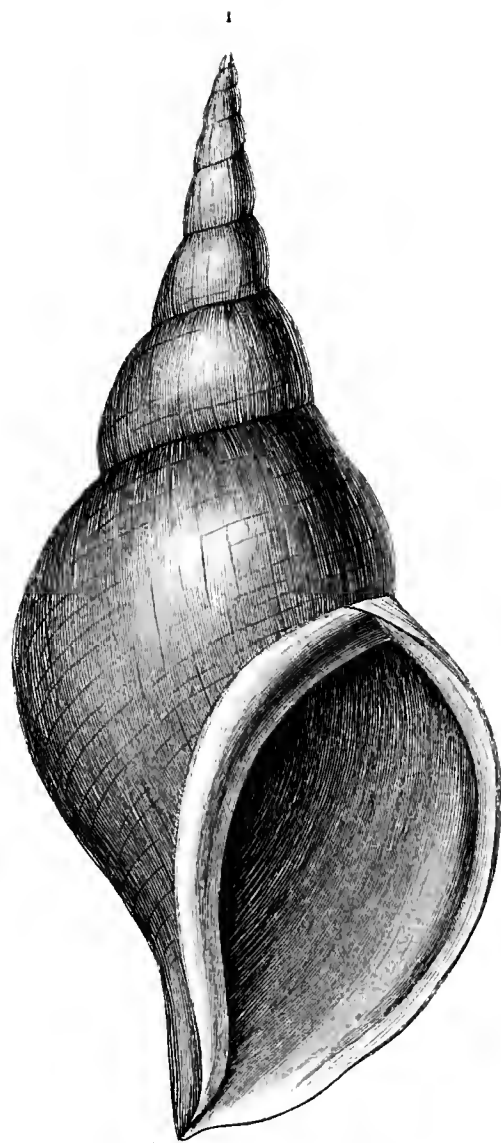






PLATE VII.



A

*Nautilus pompilius*









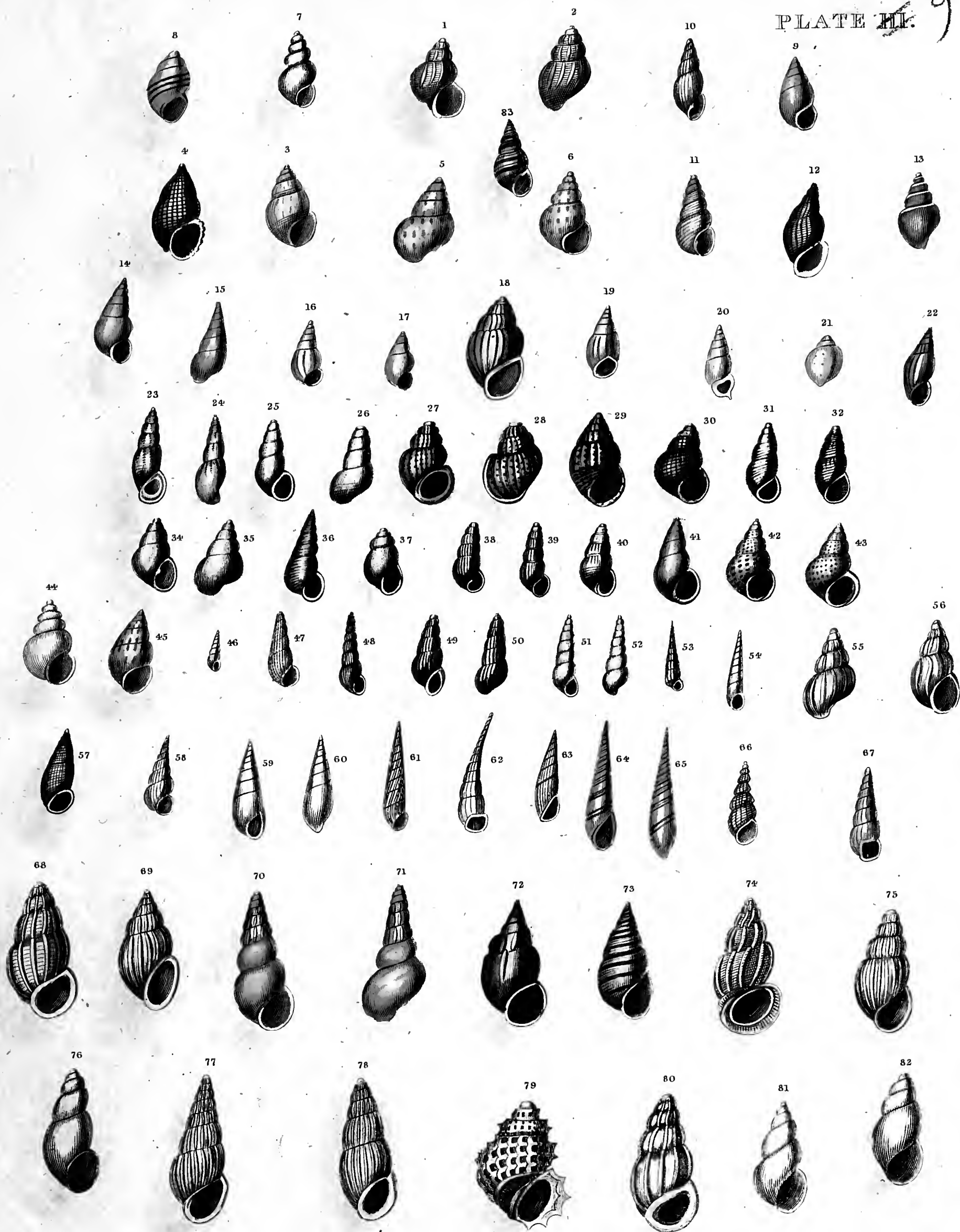


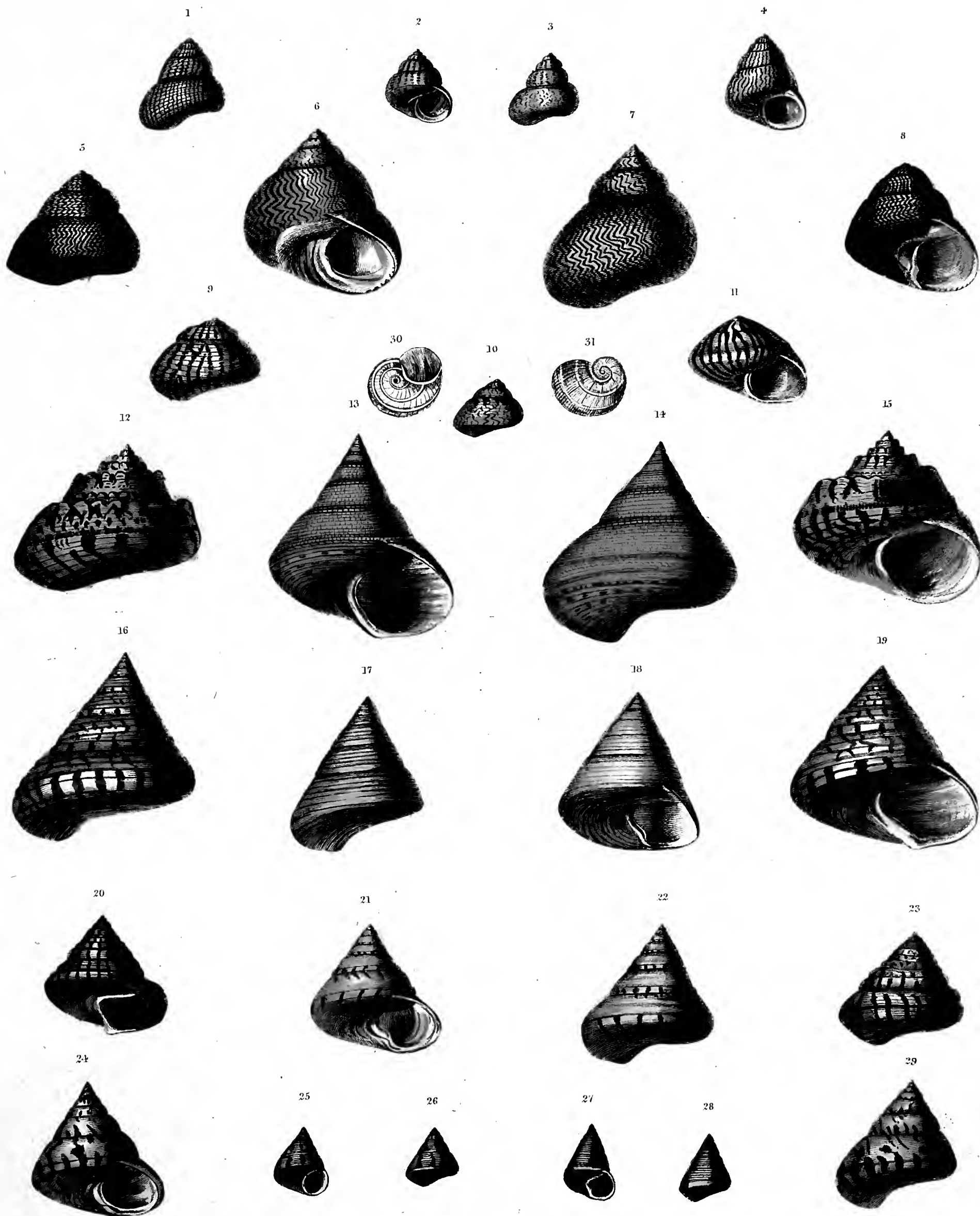


PLATE X.

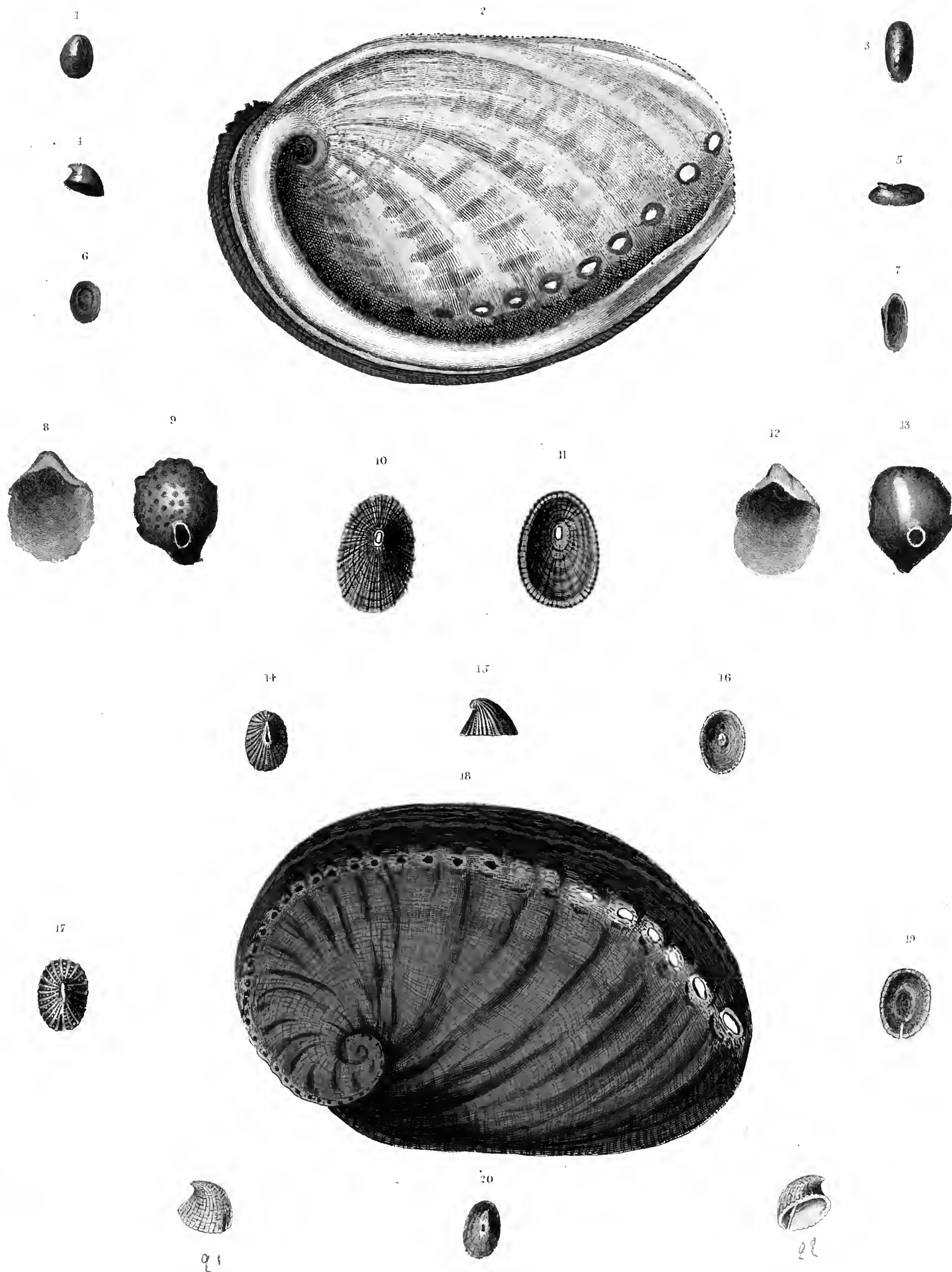


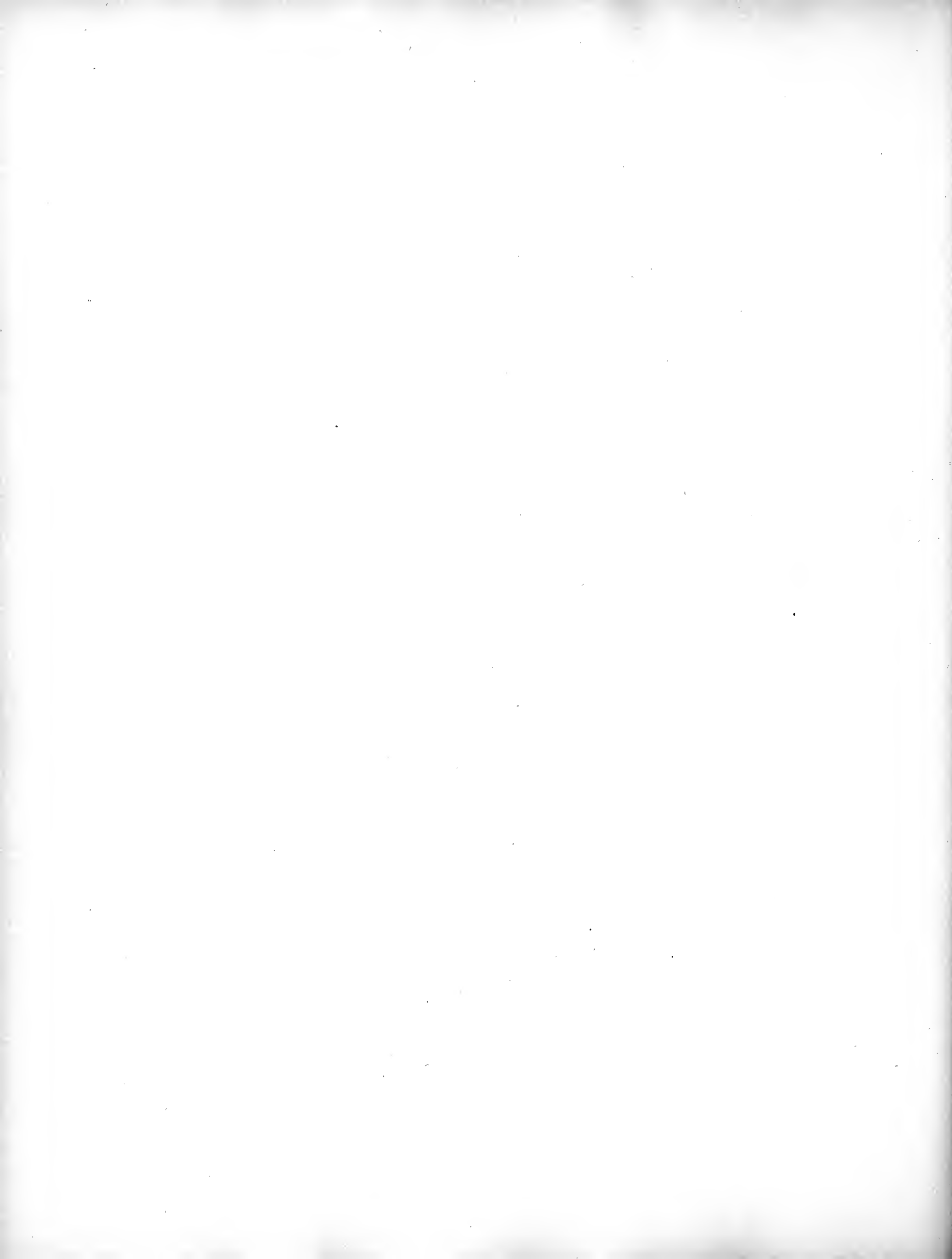




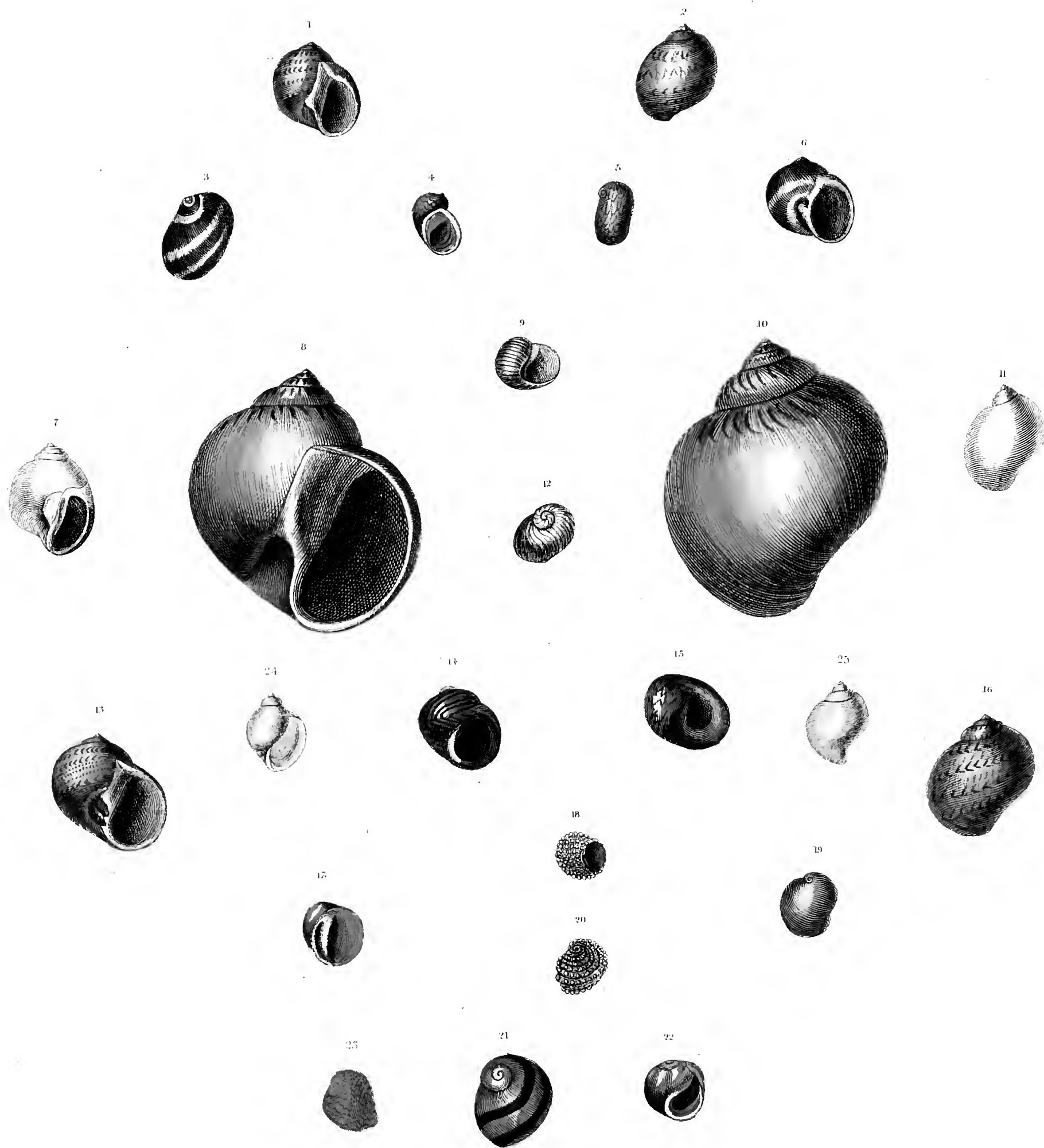












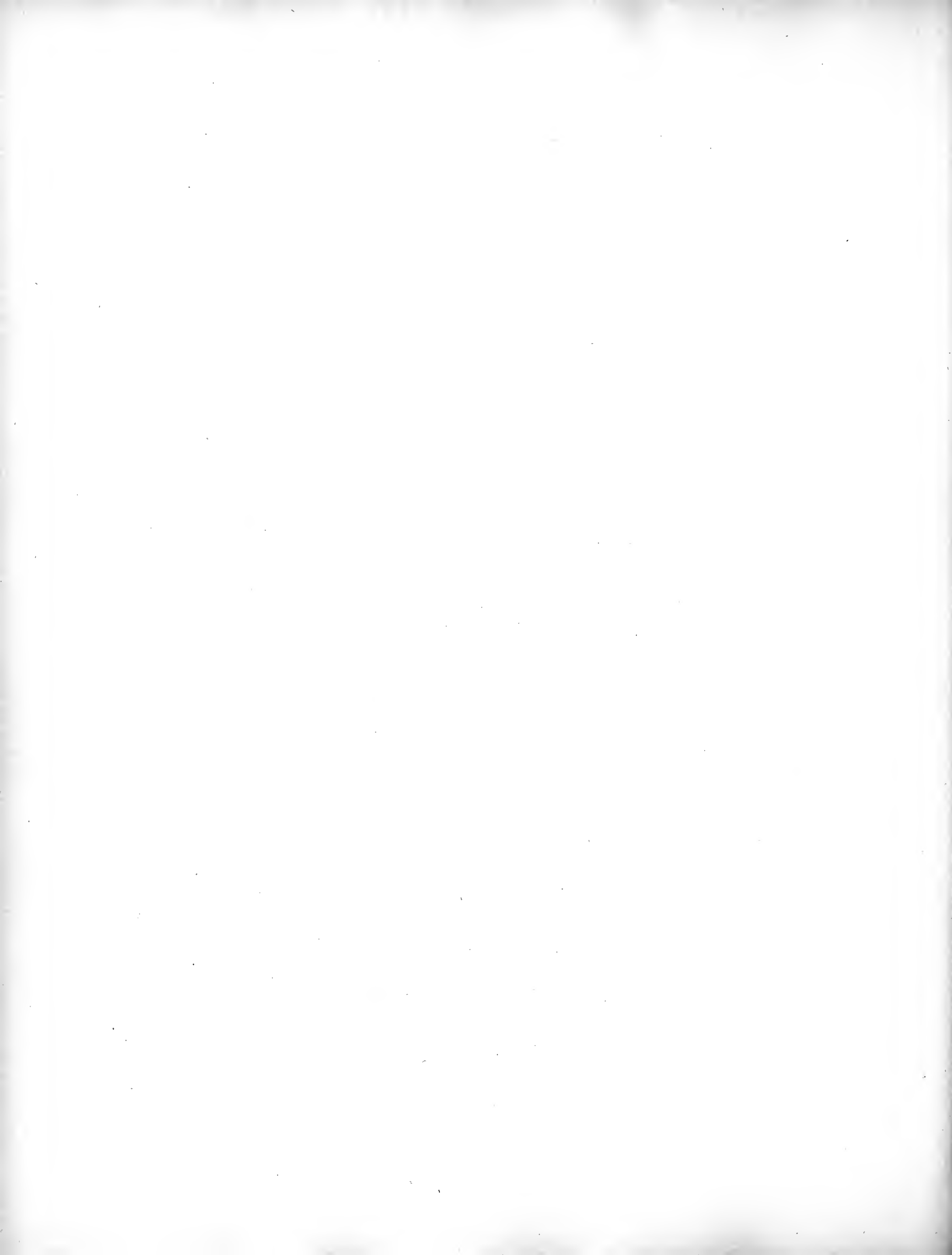
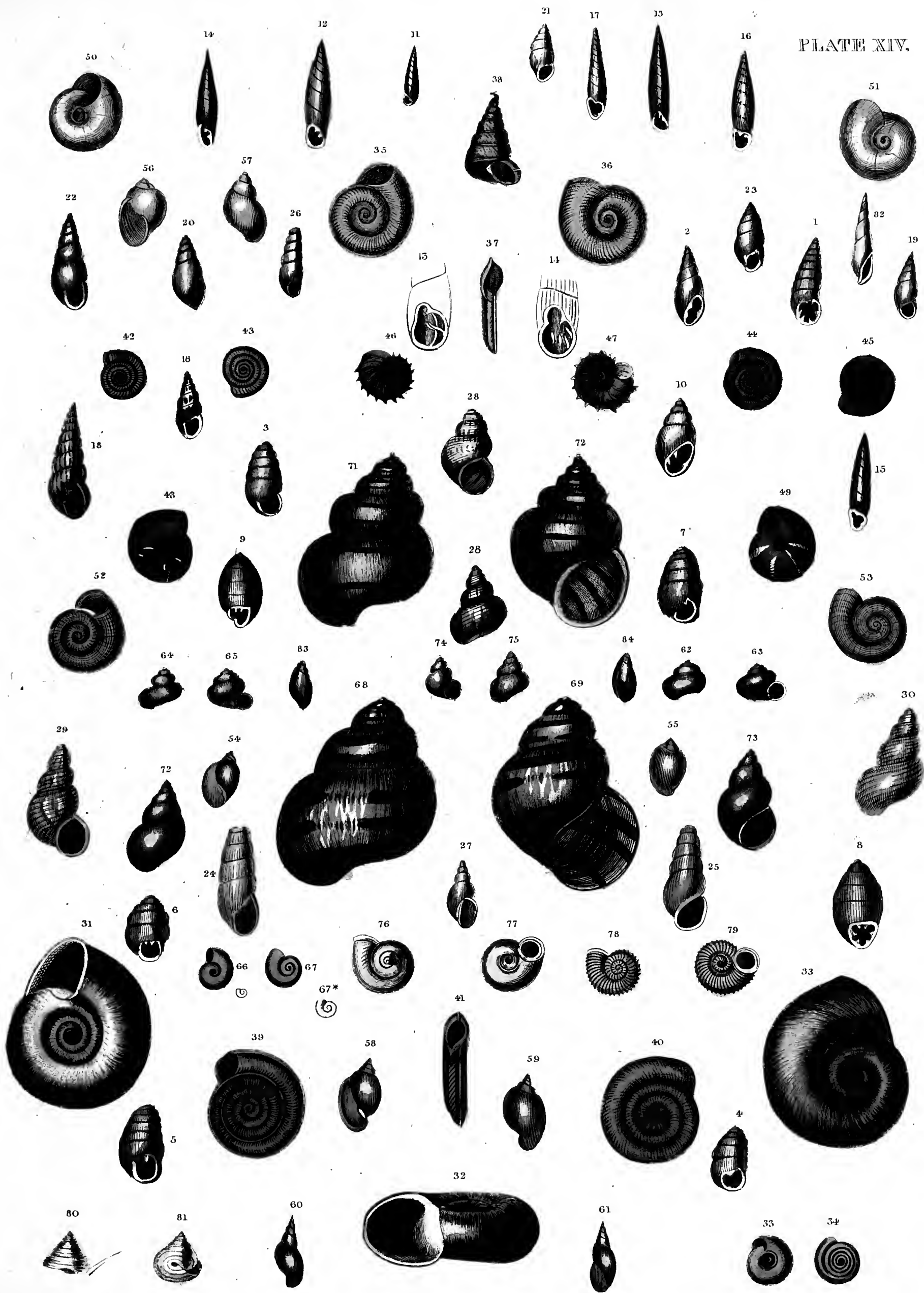


PLATE XIV.



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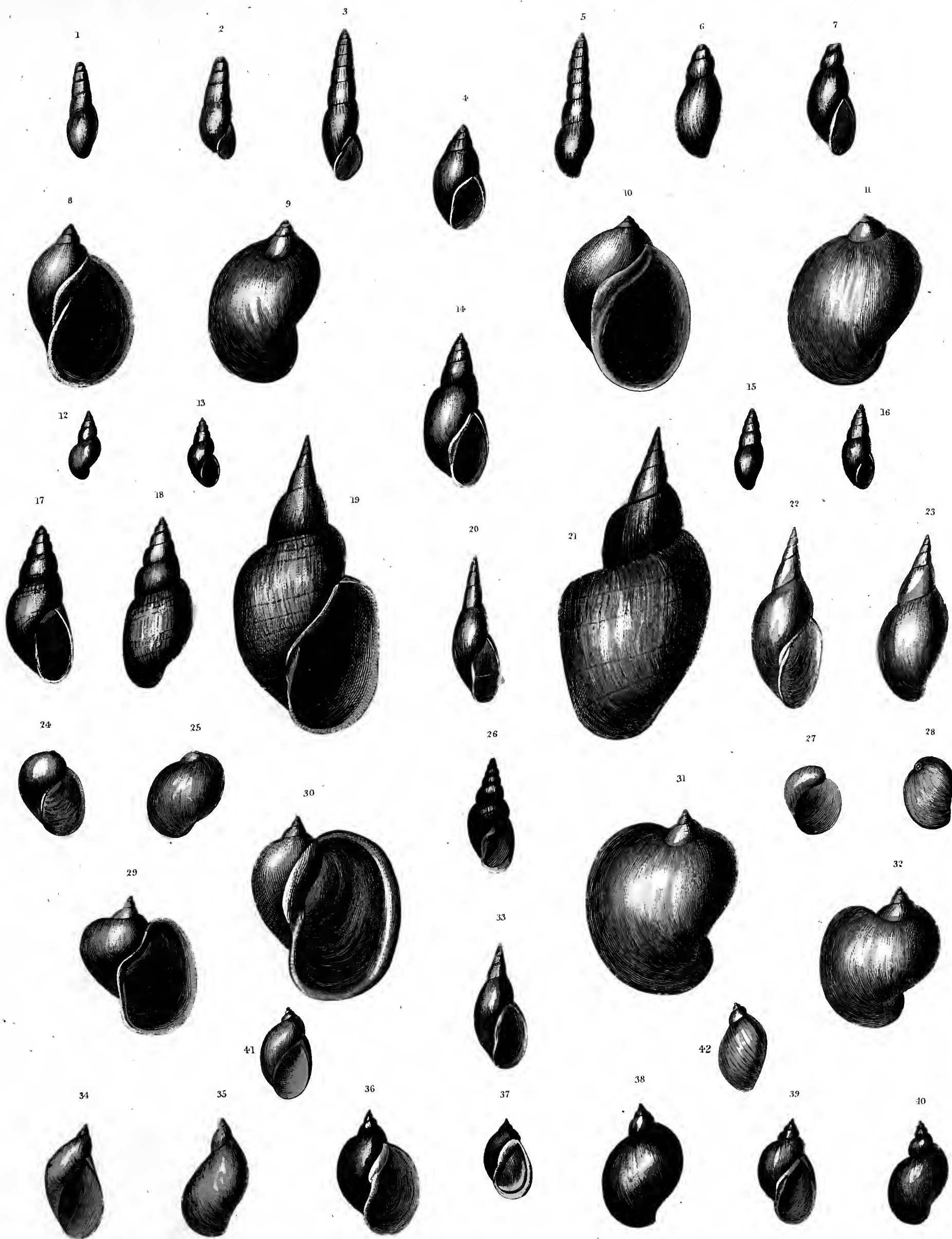


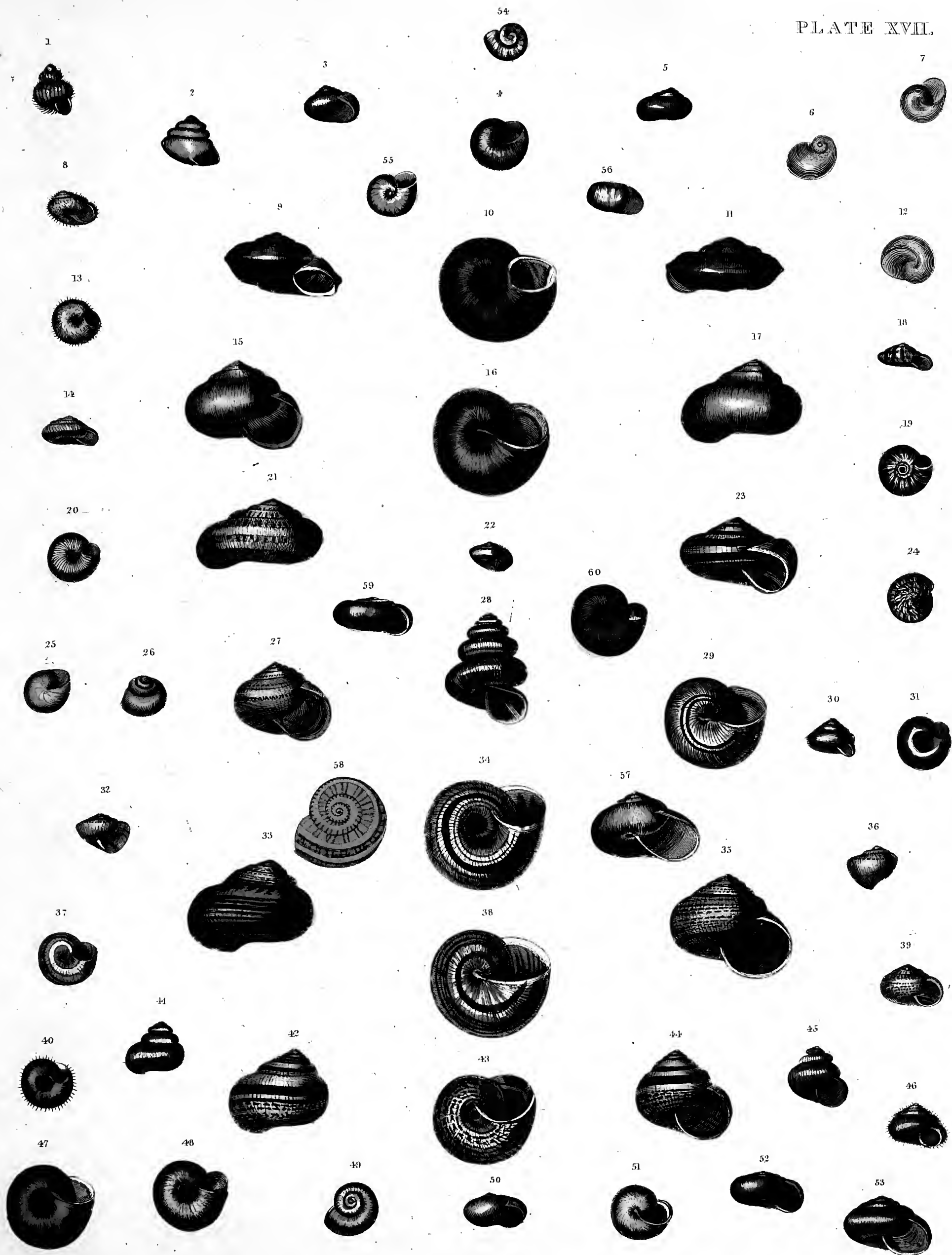








PLATE XVII.

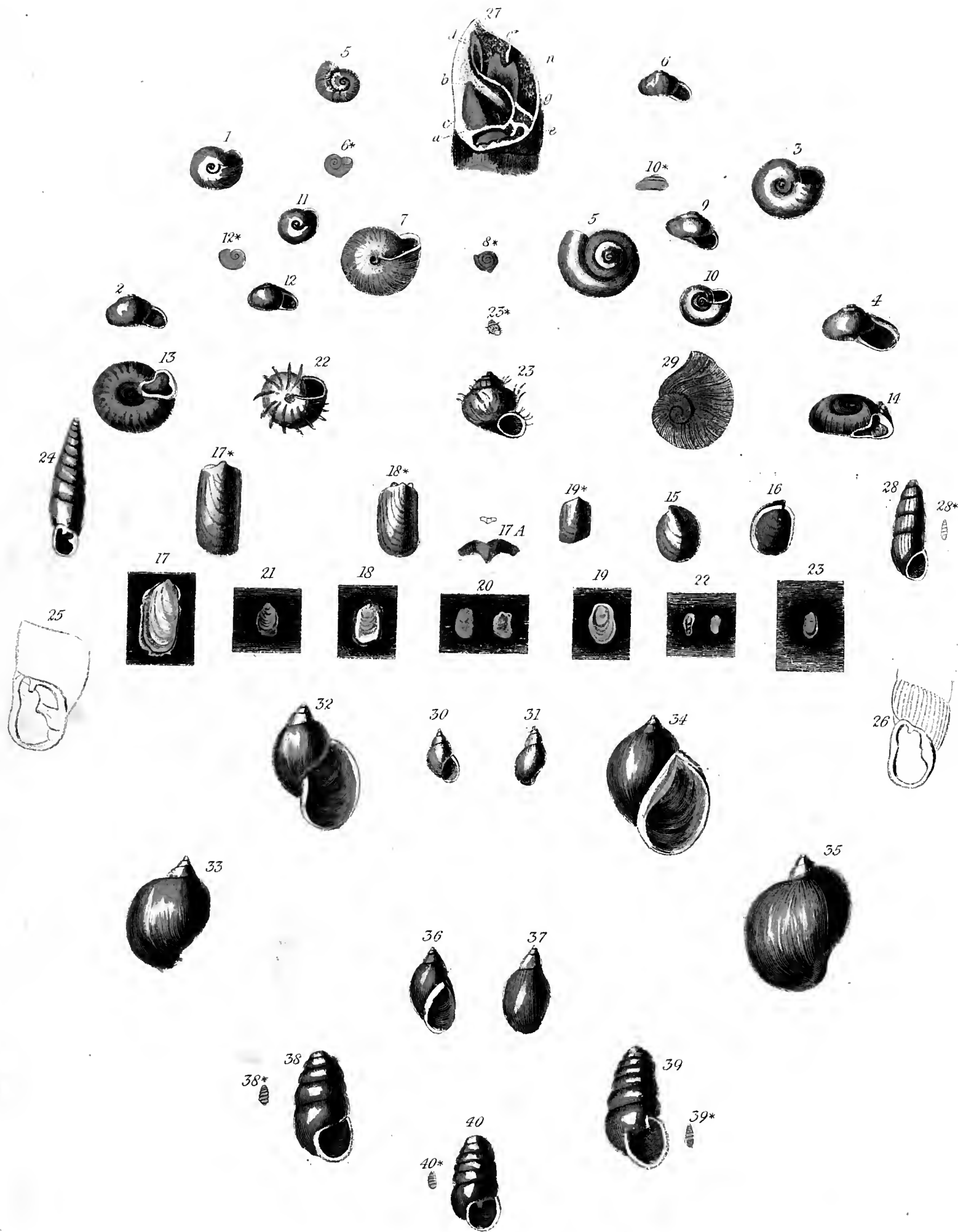




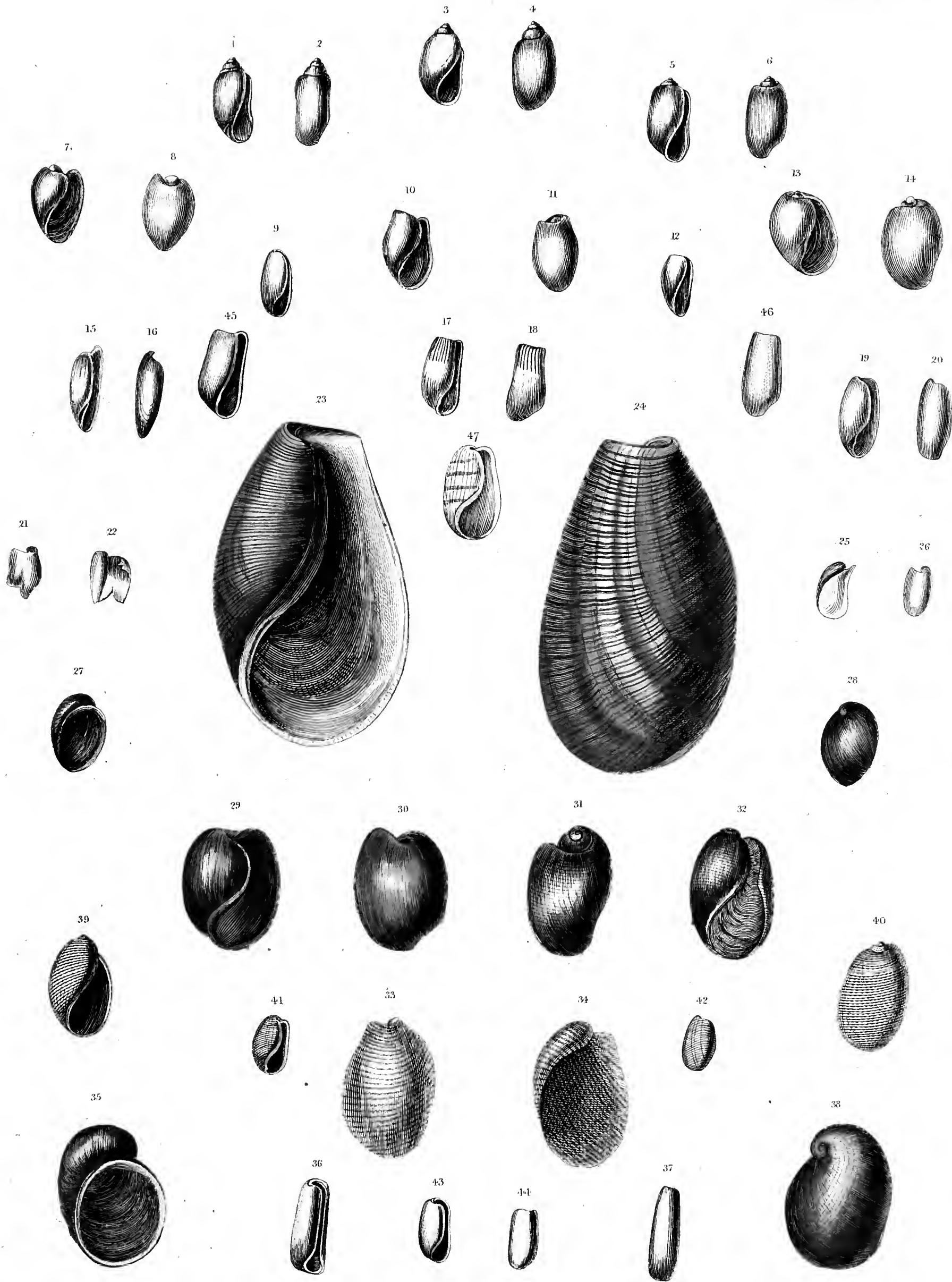










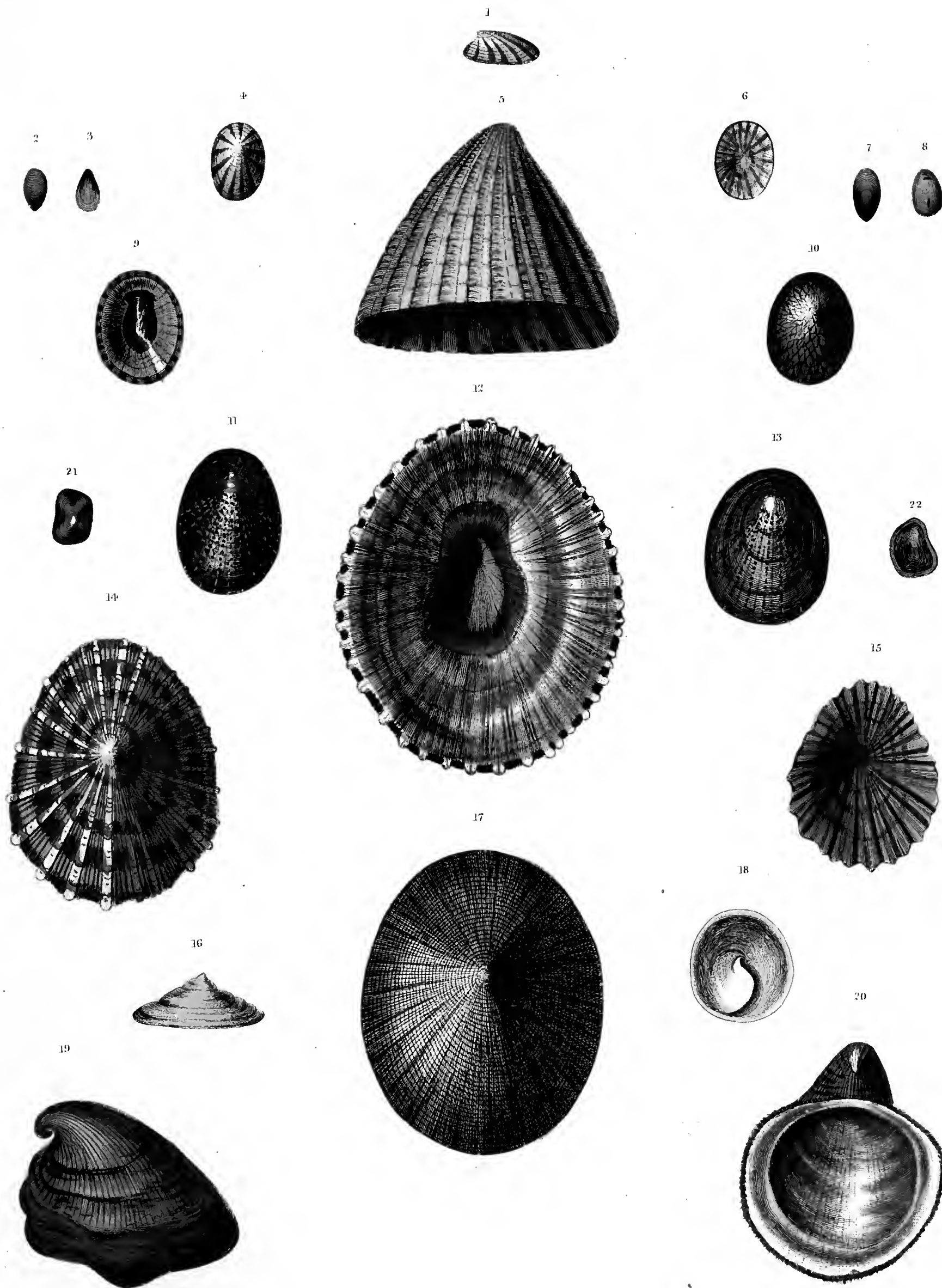


Drawn by G. P. Brown

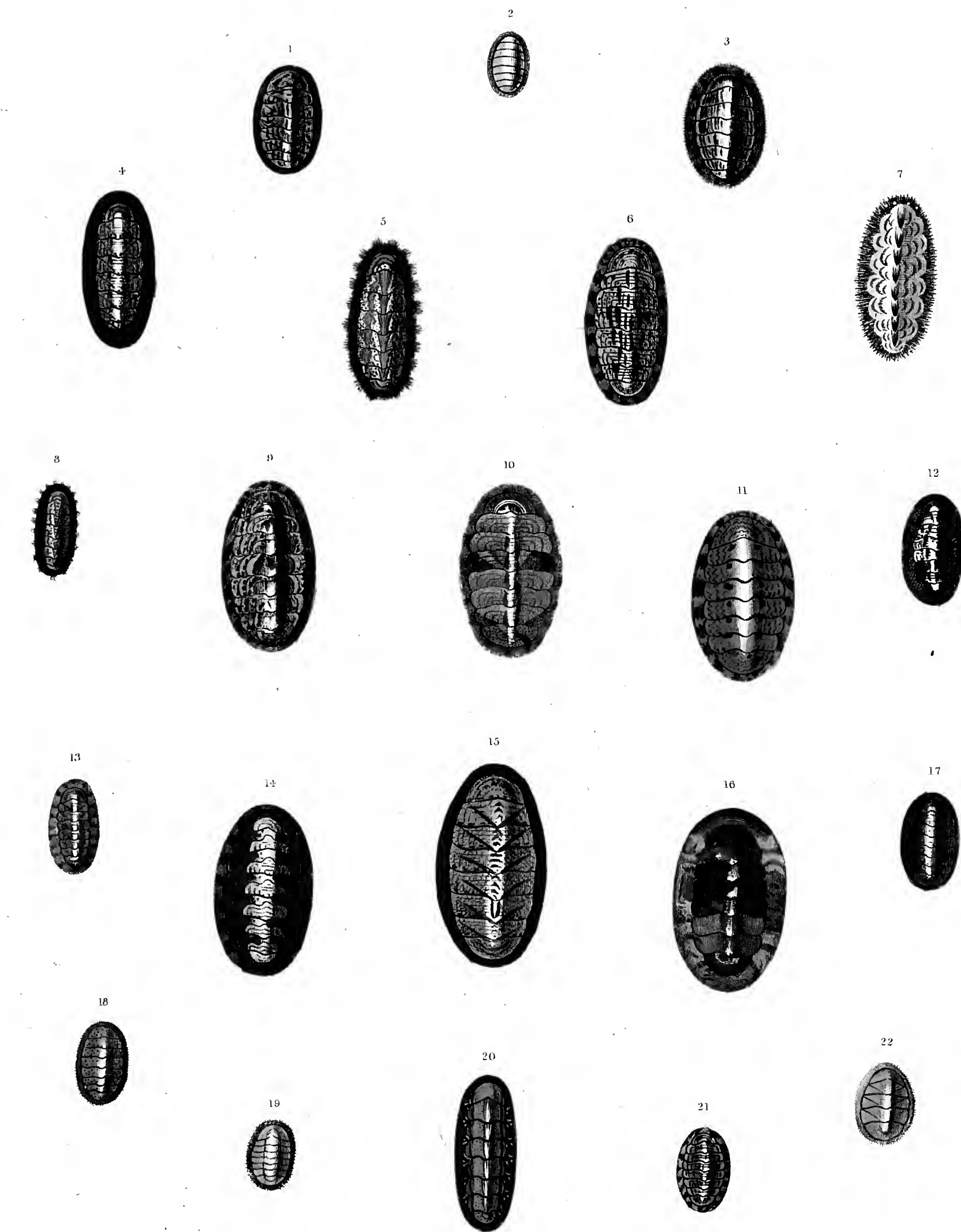
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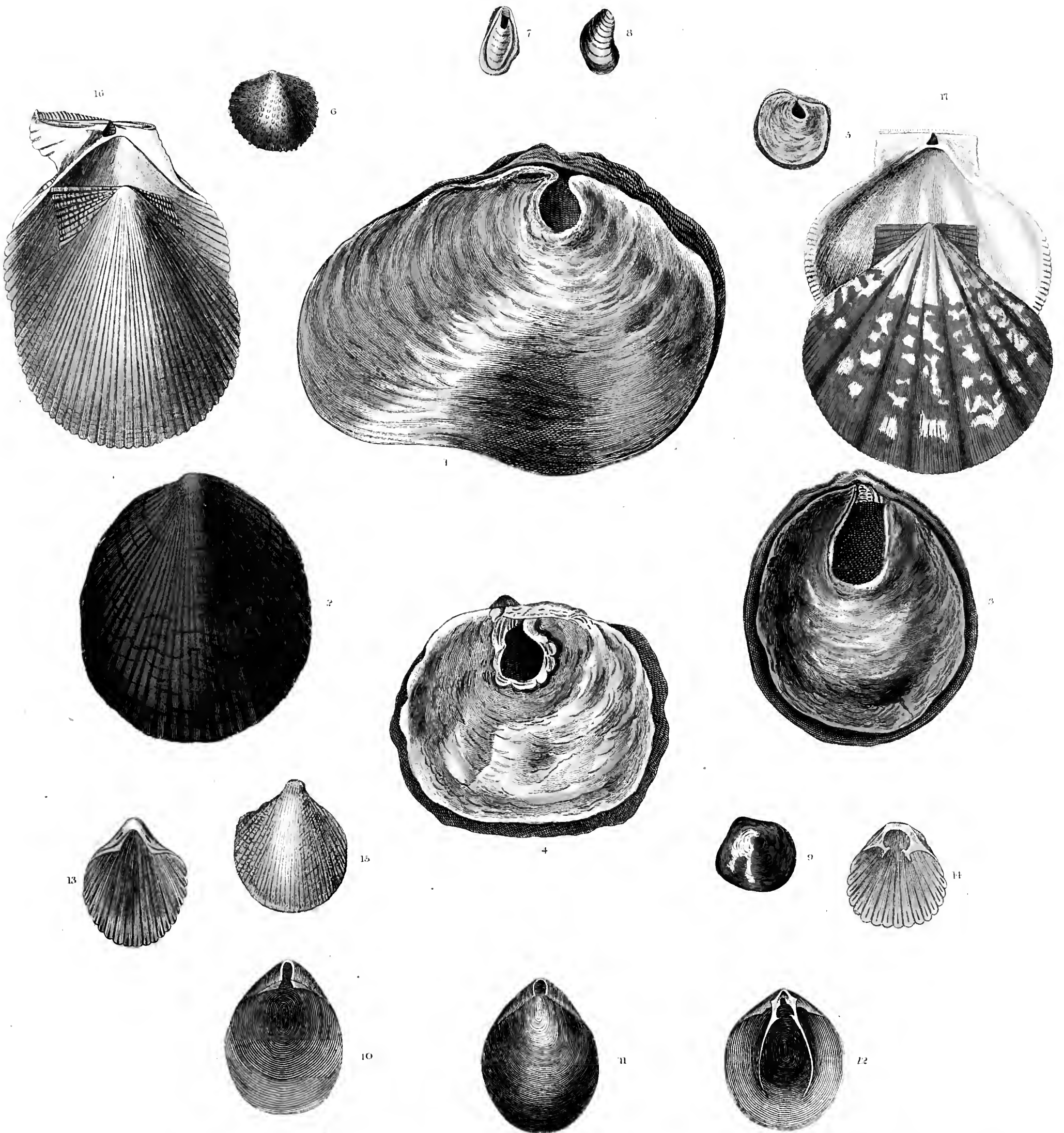












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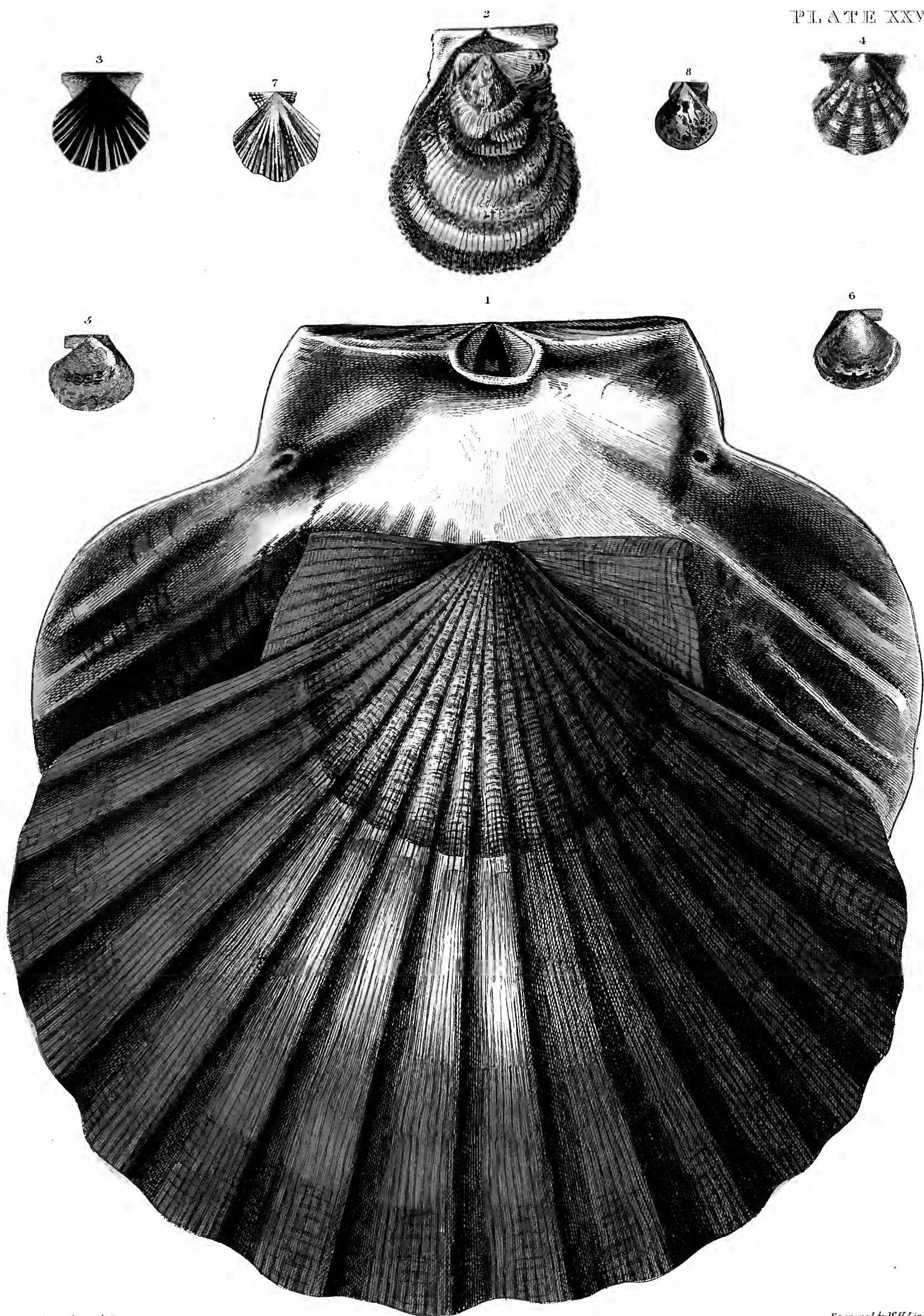


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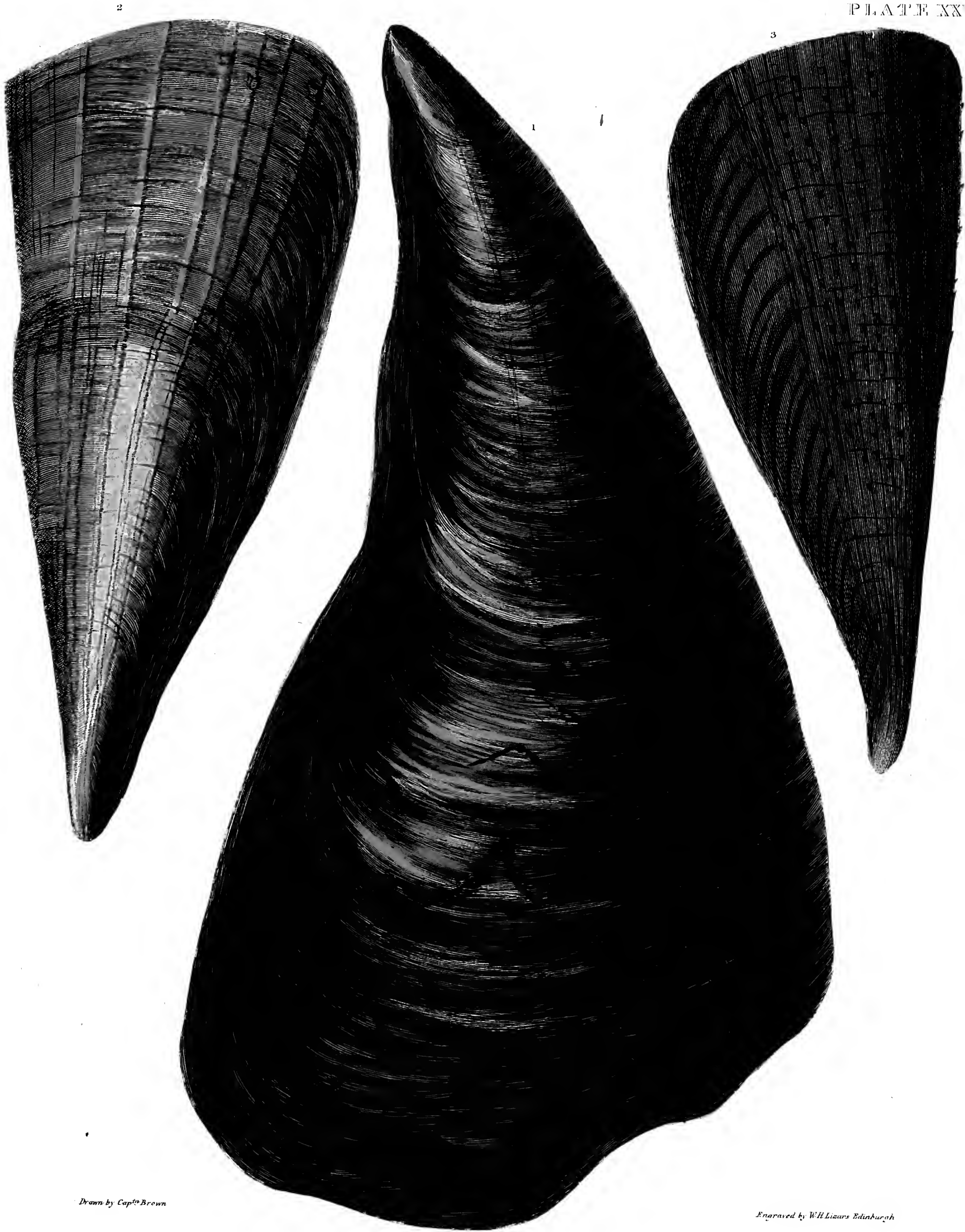
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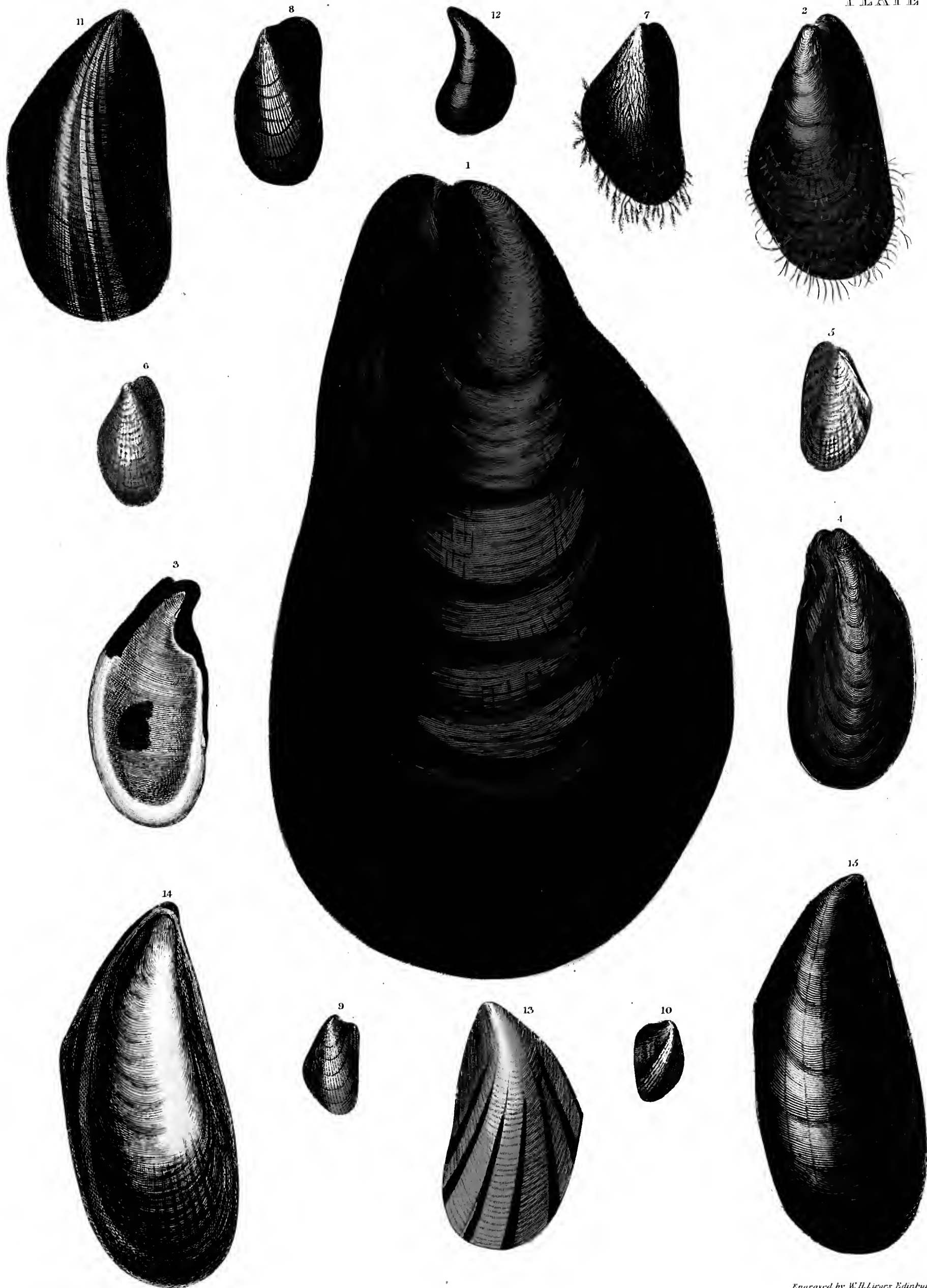


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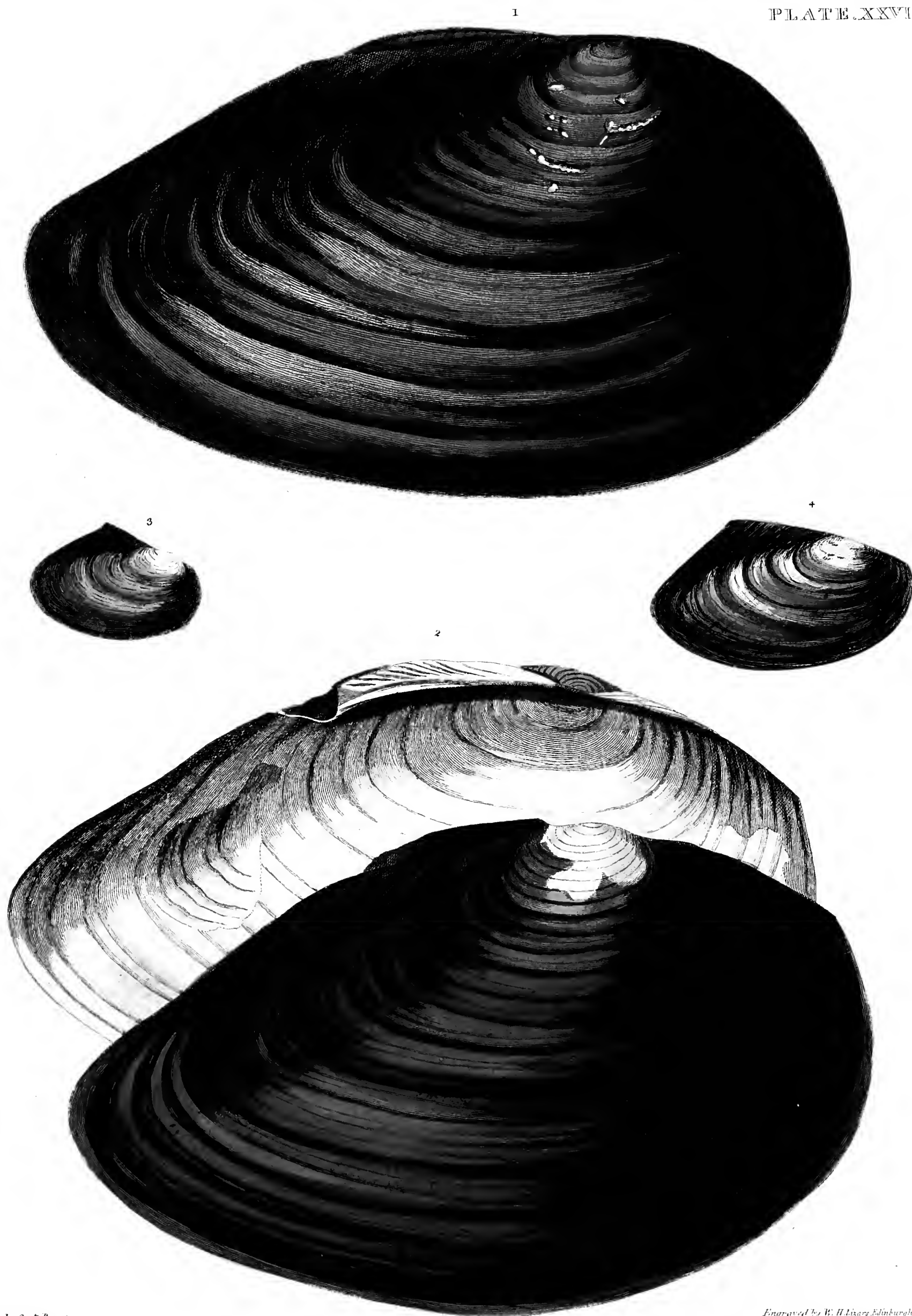
*Engraved by W.H. Lizars Edinburgh*





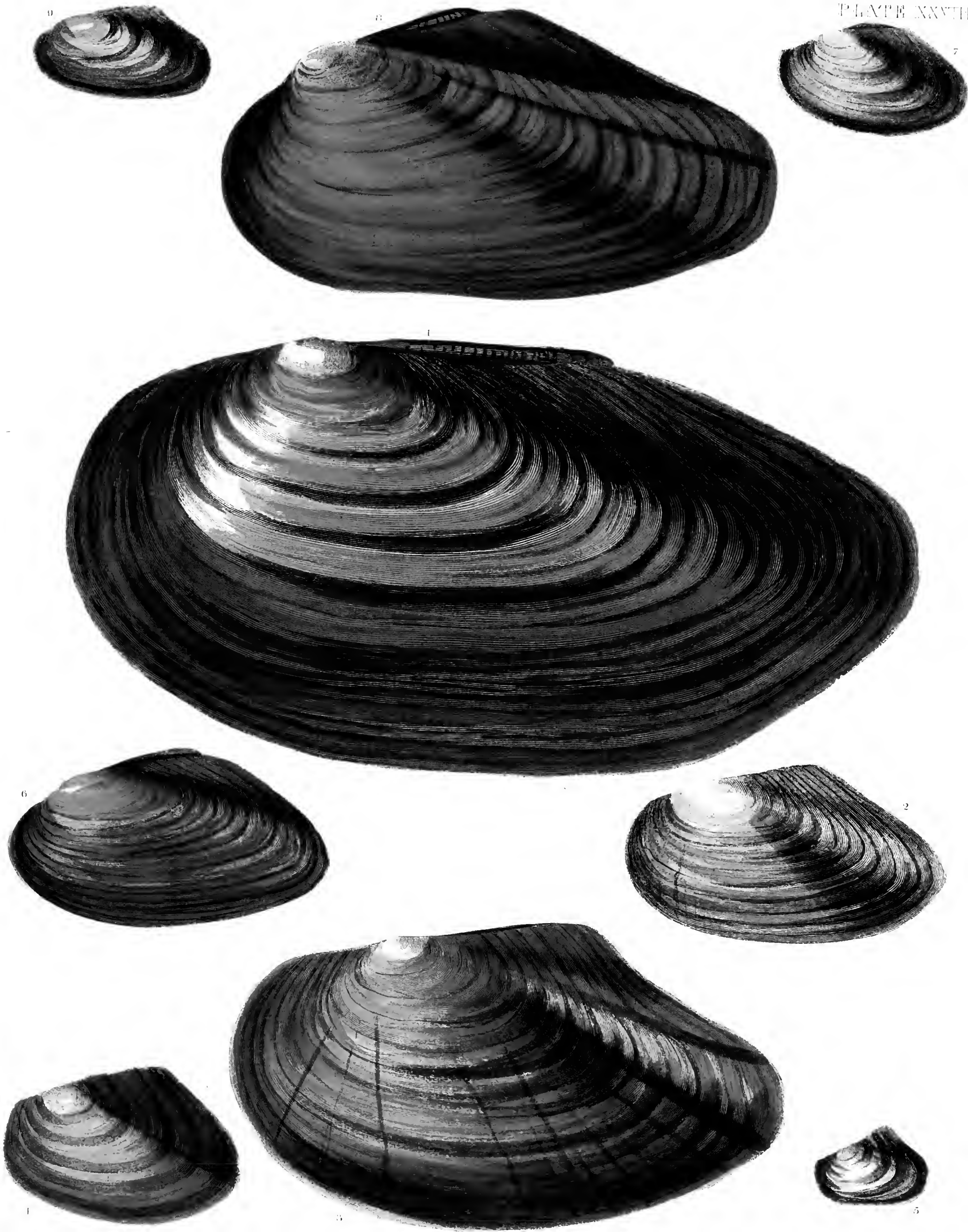








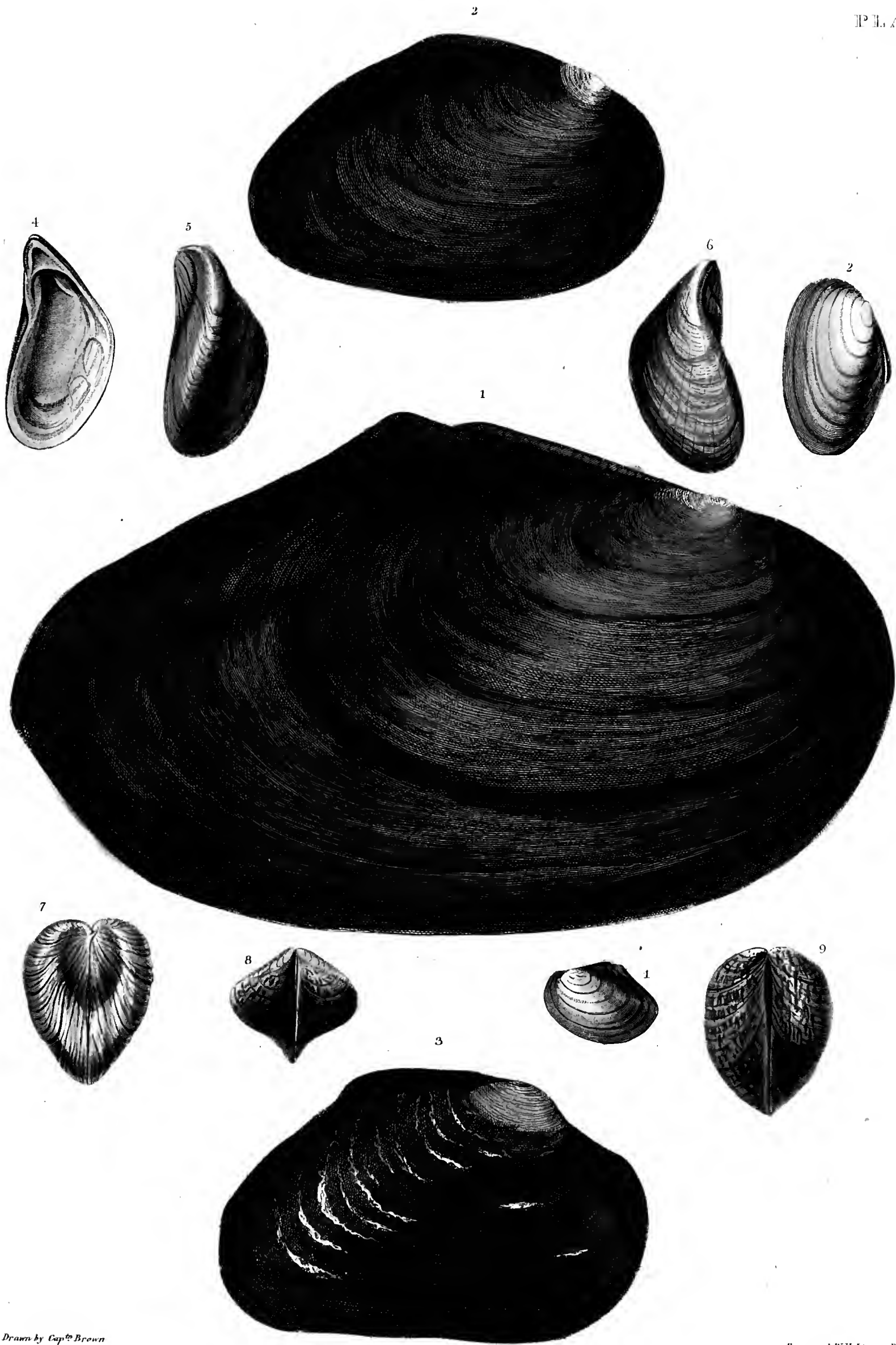




Drawn by Capt. Brown.

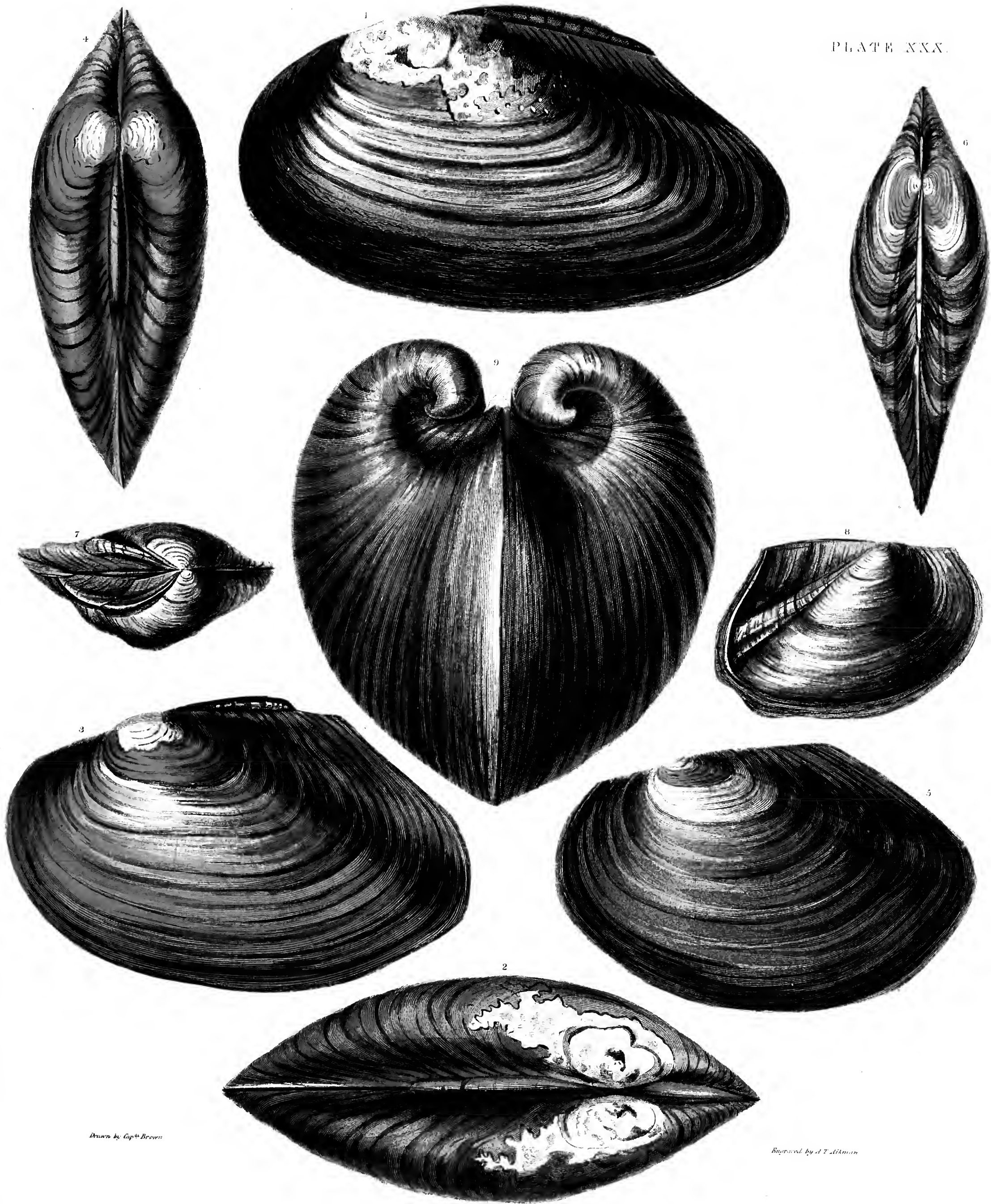
Engraved by J.T. McKim, Edin.





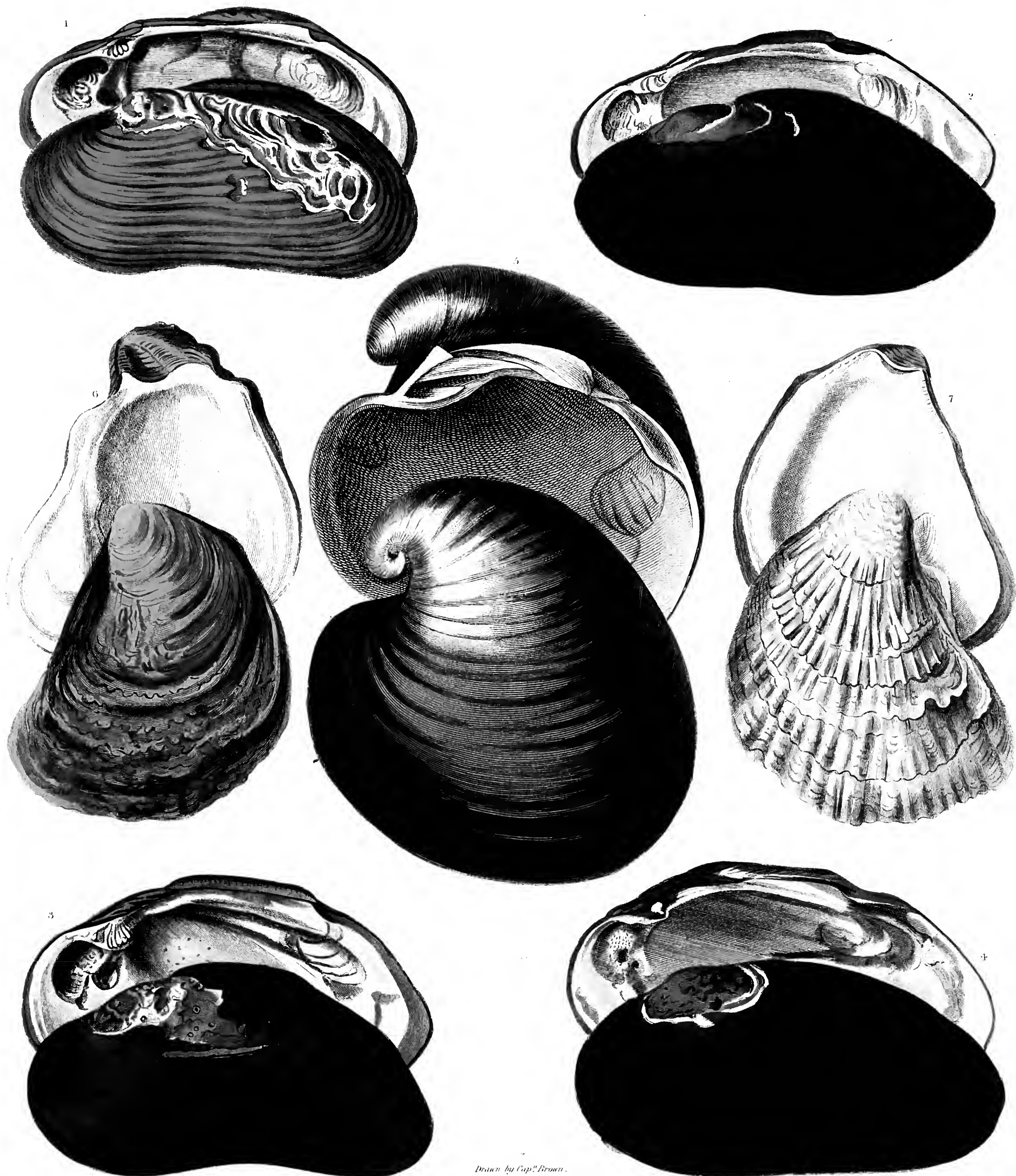






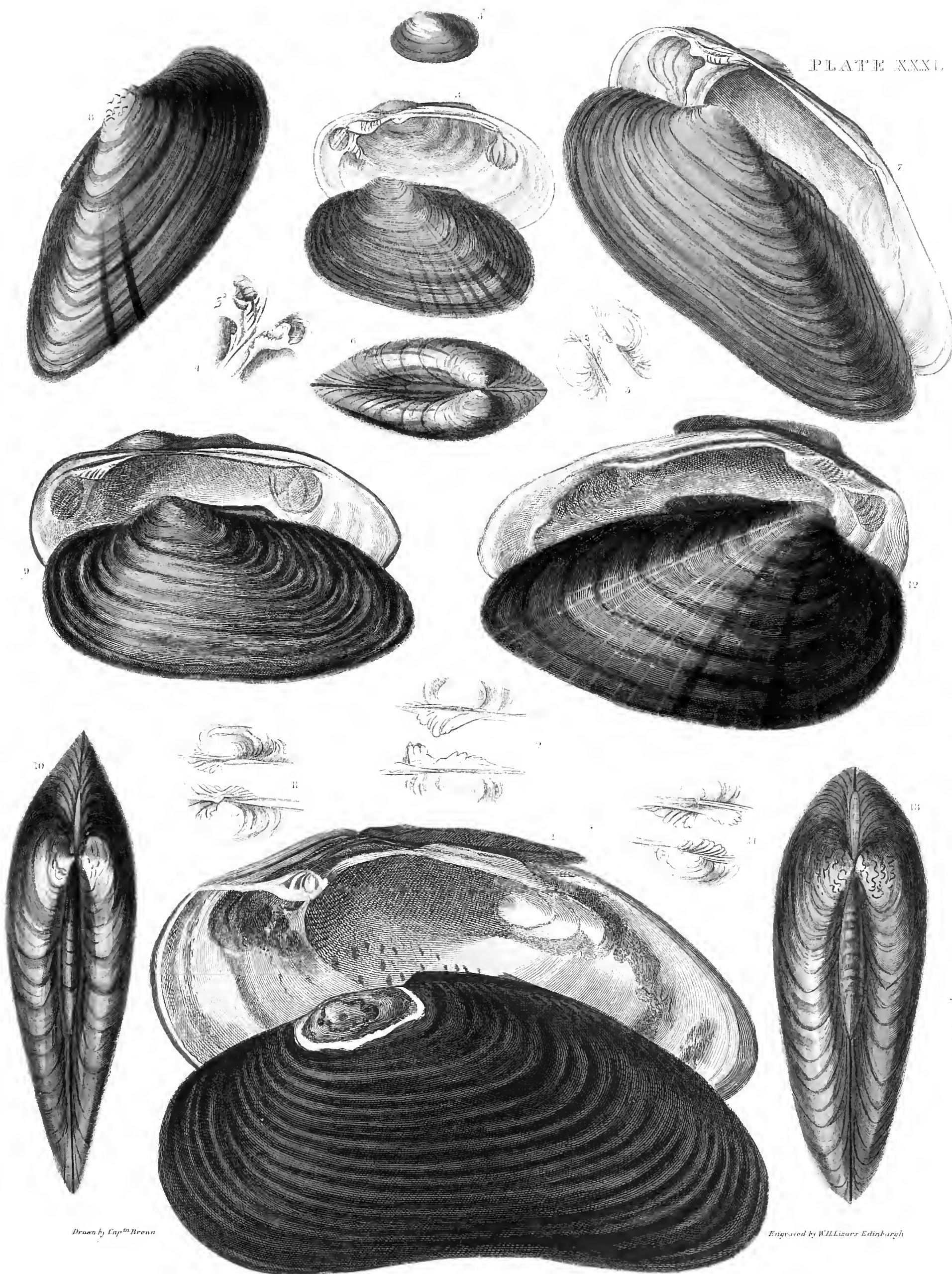








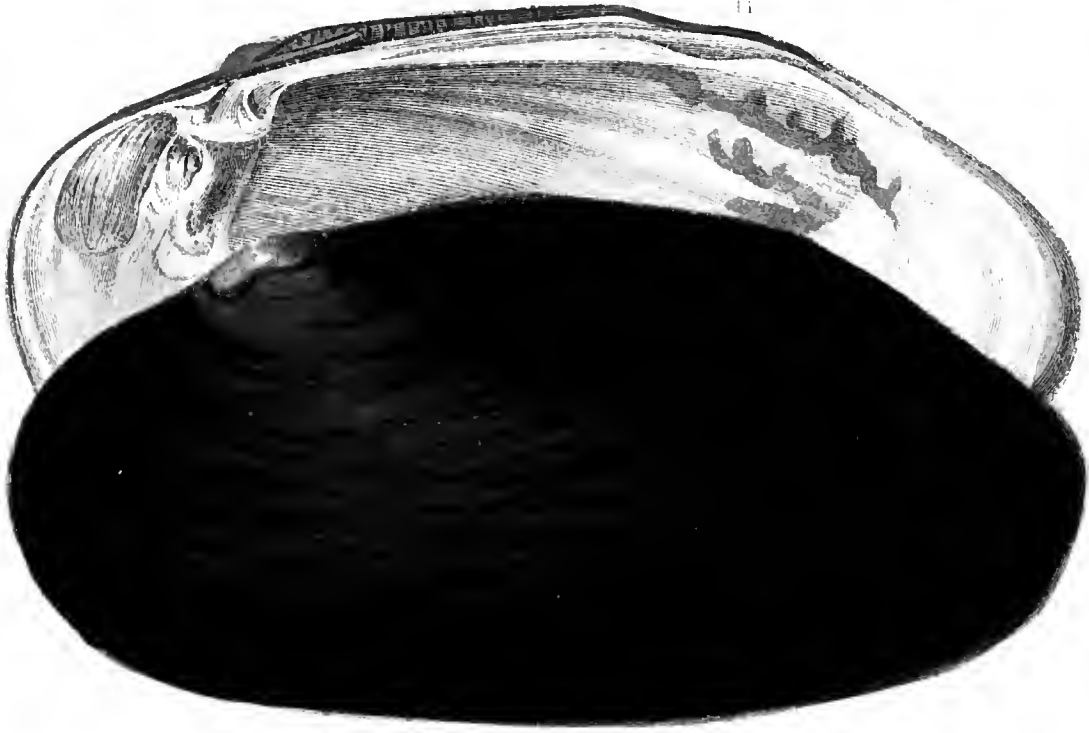
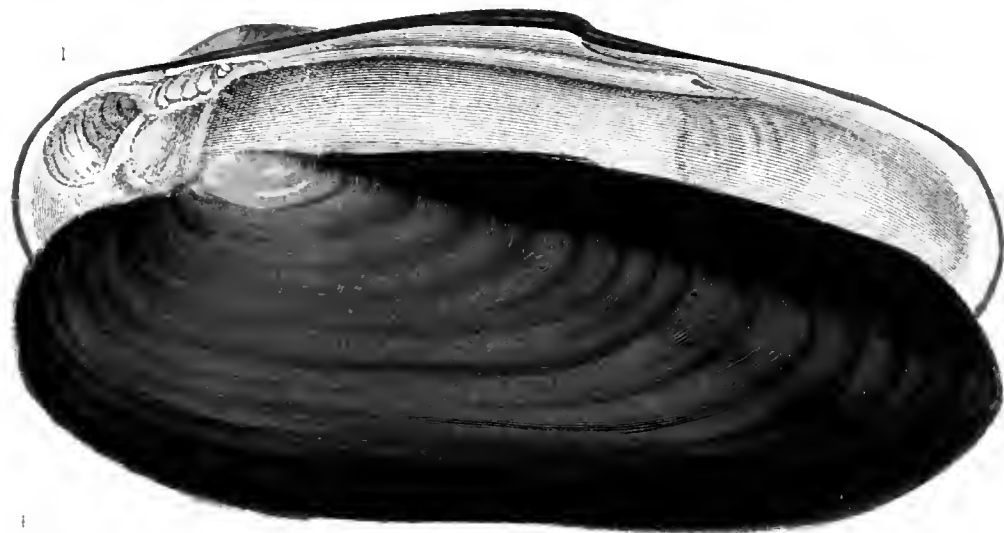




Drawn by Cap<sup>tn</sup> Brown

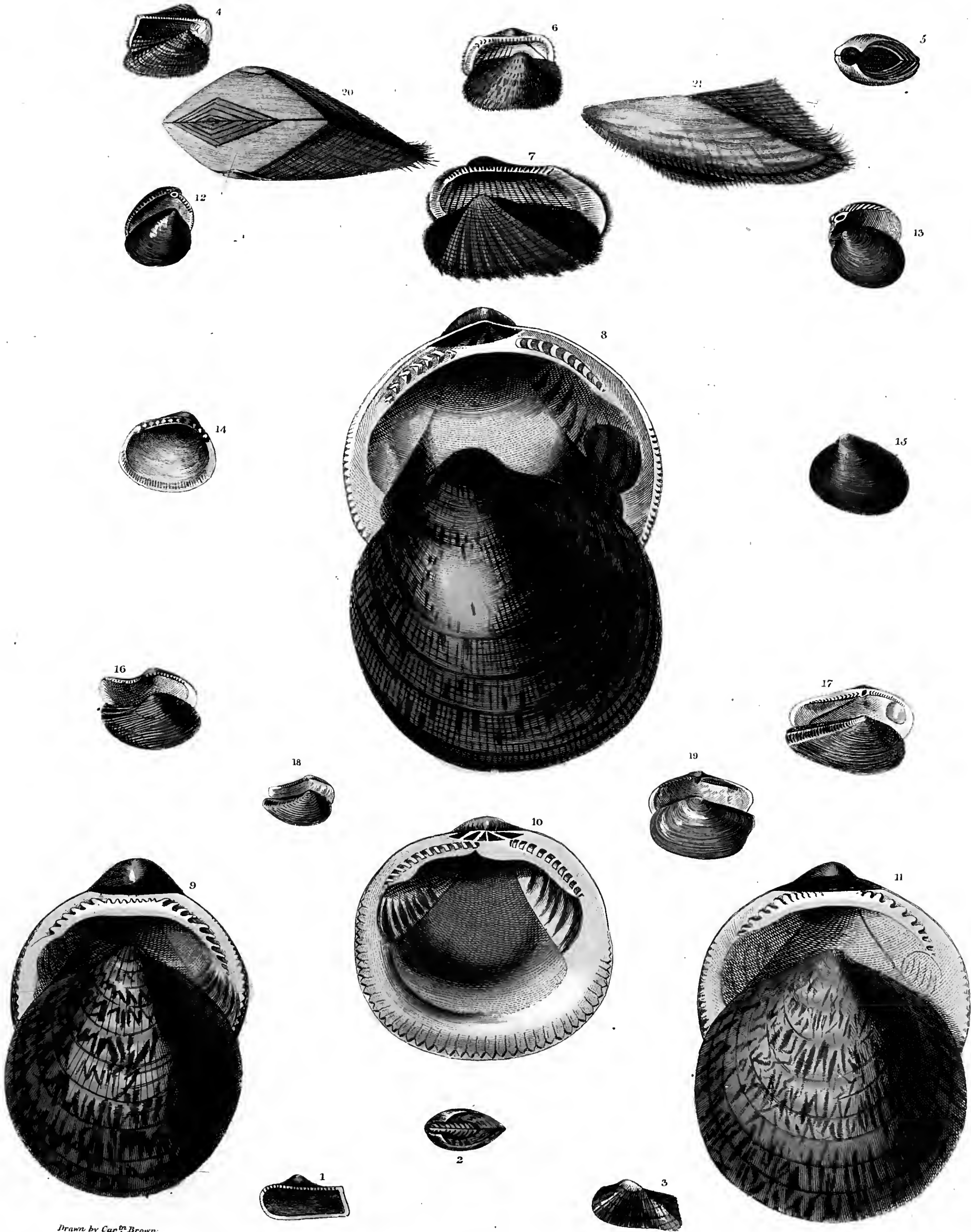
Engraved by WILLIAMS Edinburgh







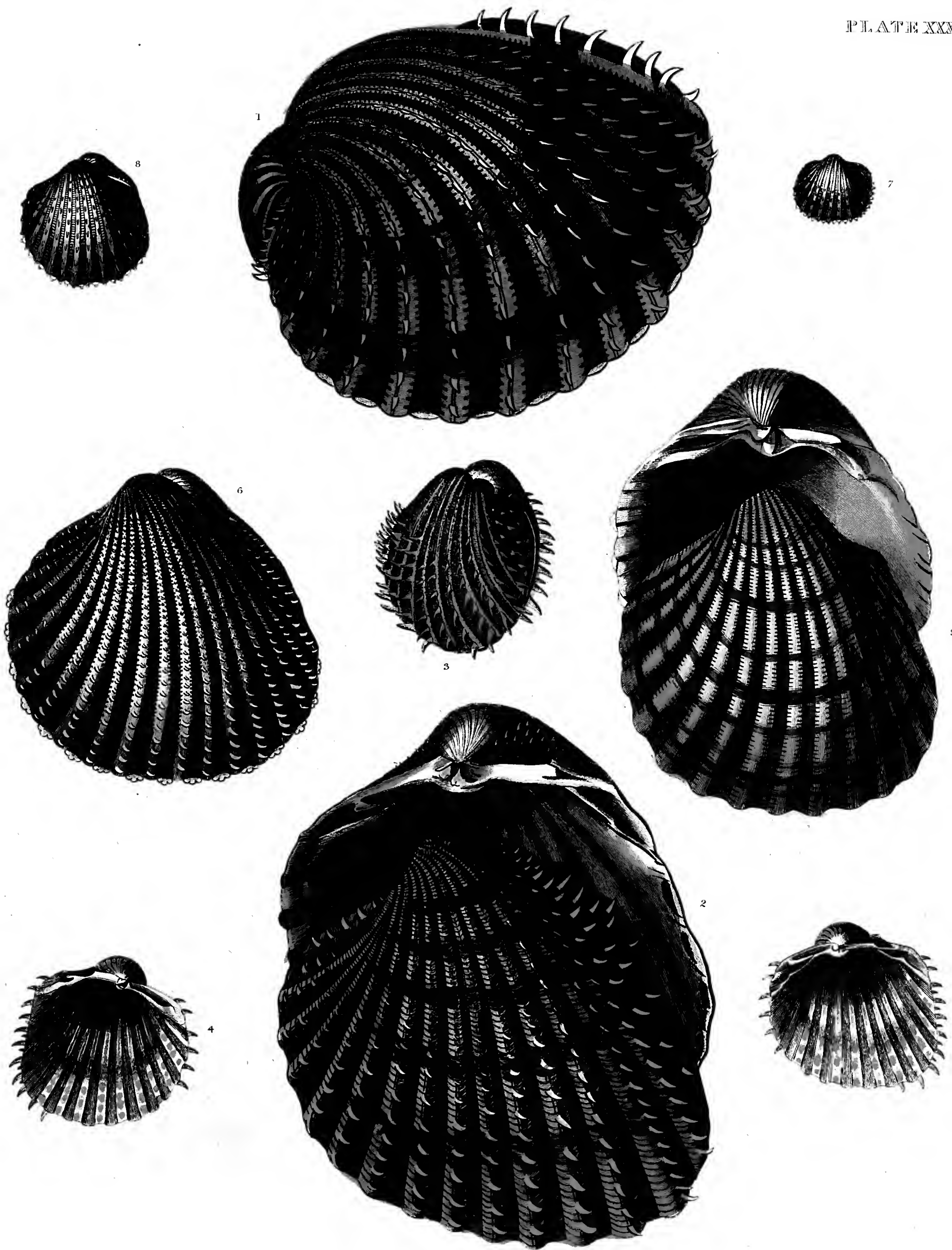




Drawn by Cap<sup>l</sup> Brown.

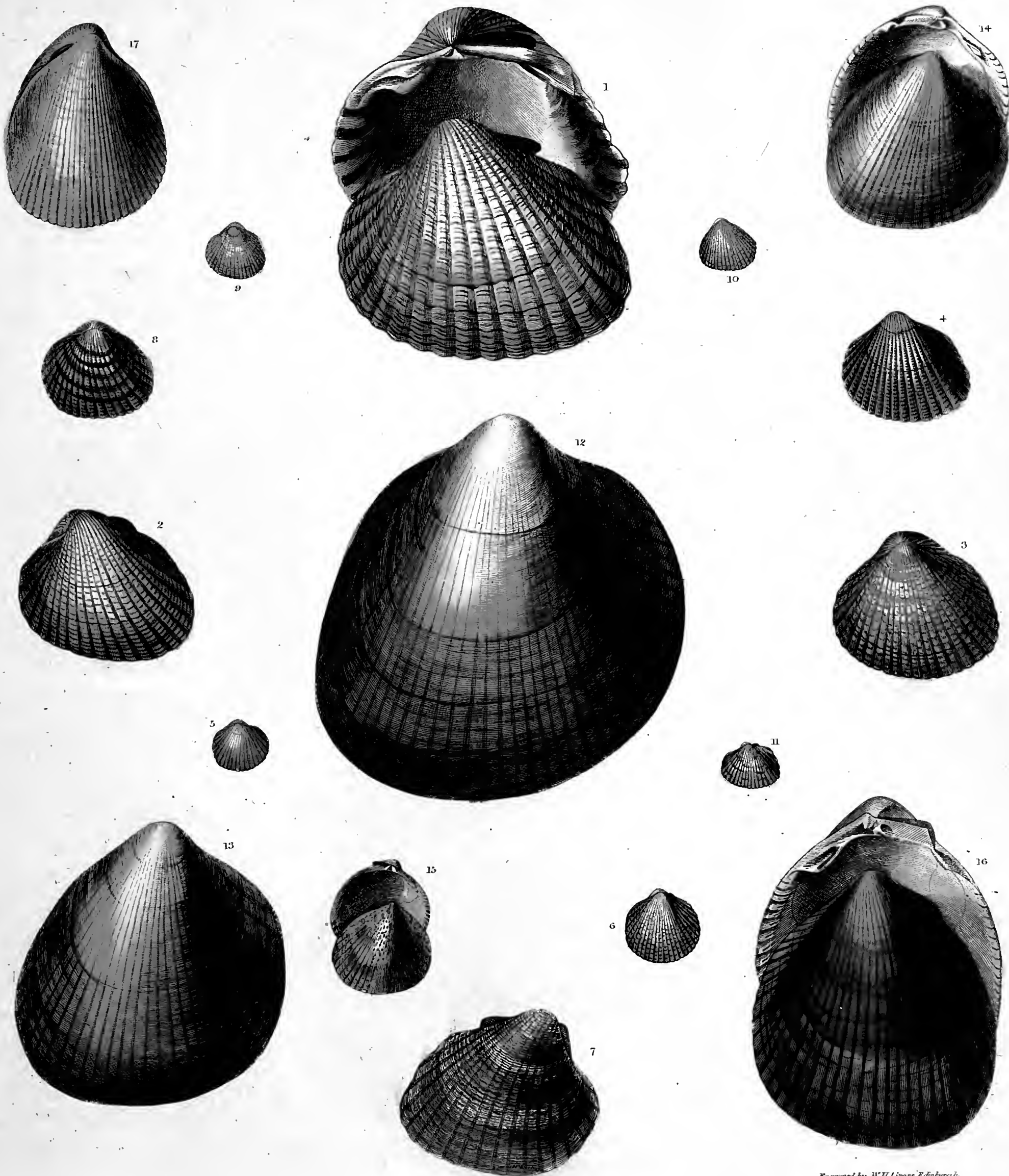
Engraved by W.H. Lizars Edinburgh.







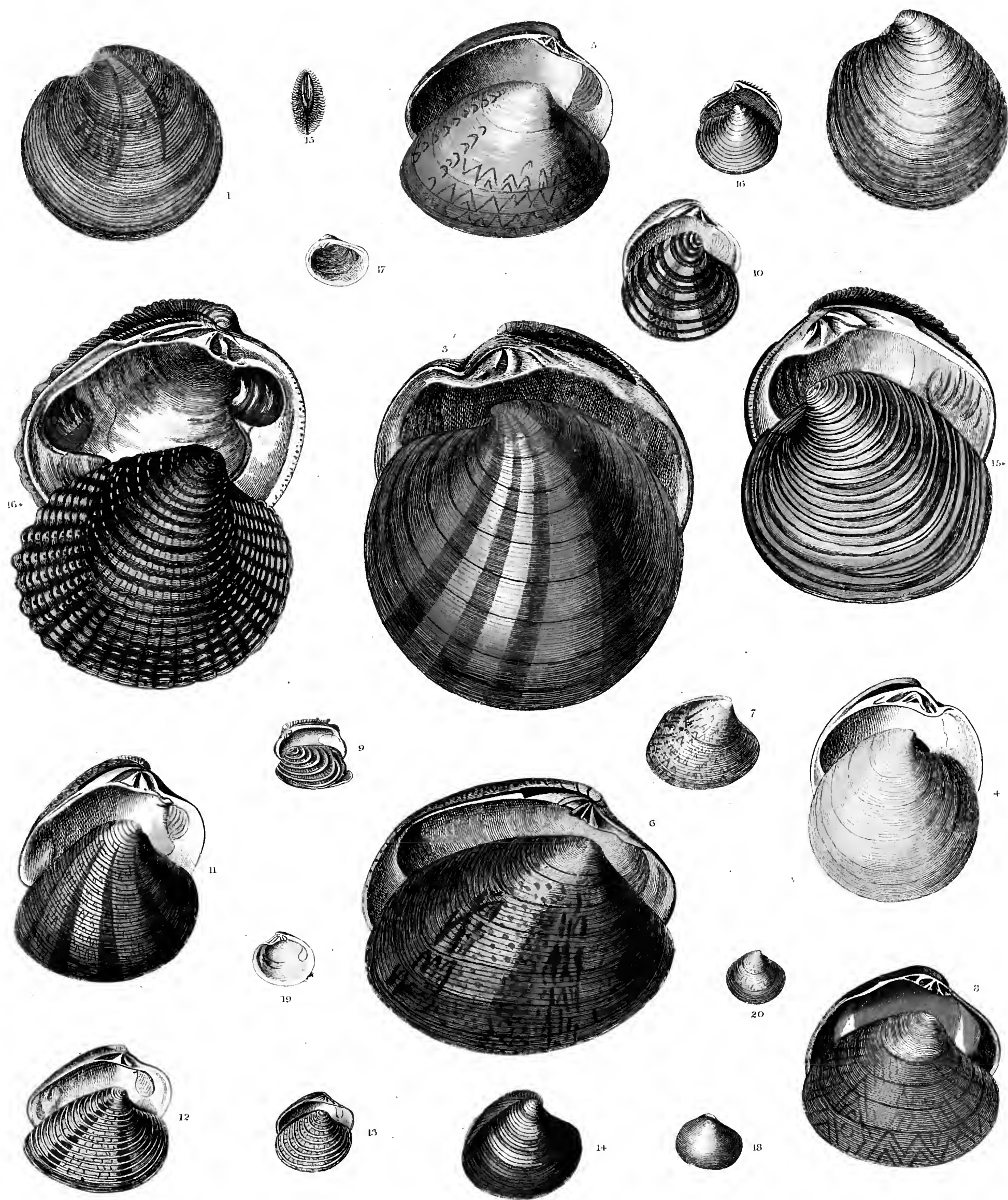




*Drawn by Capt. Brown.*

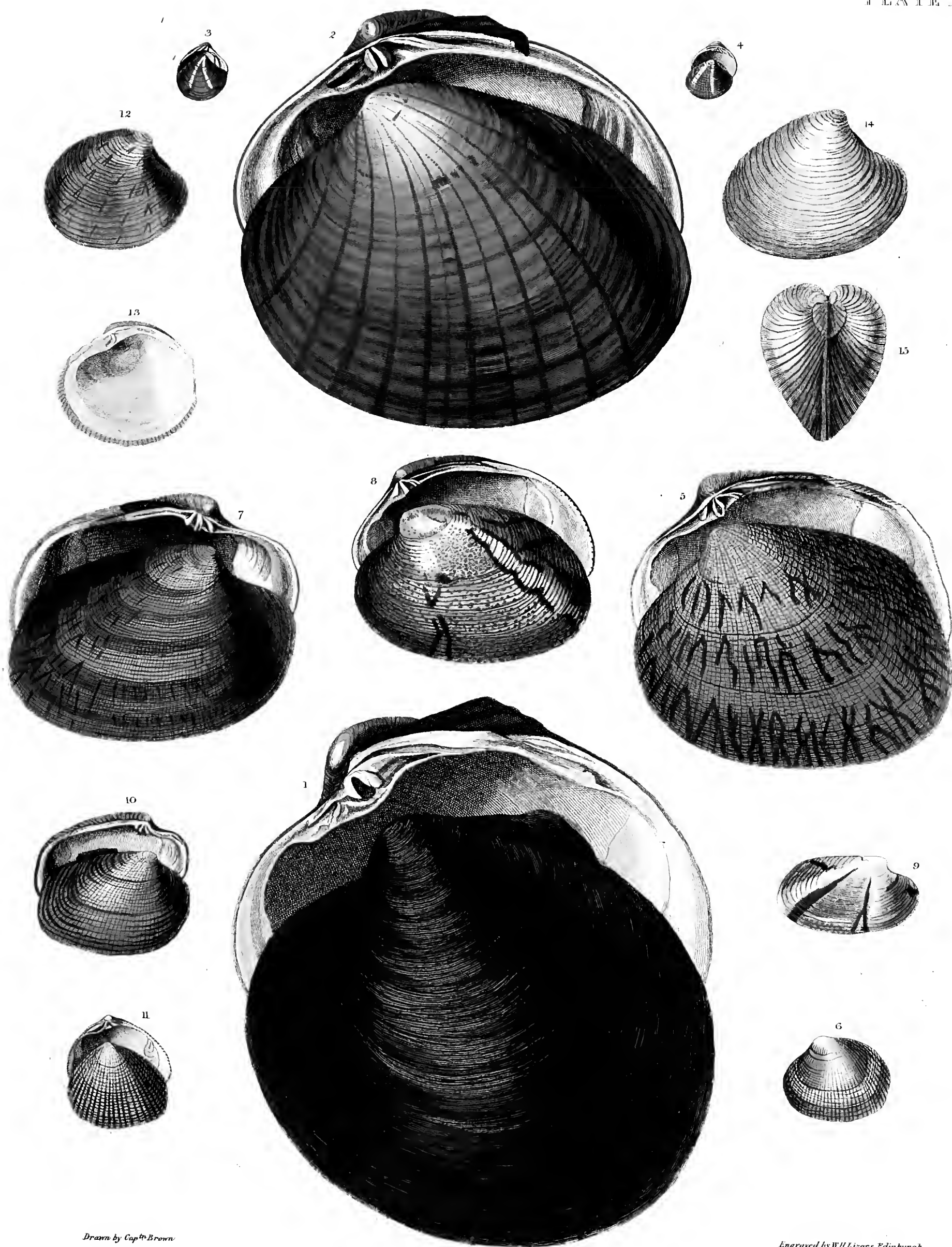
*Engraved by W. H. Lizars Edinburgh.*







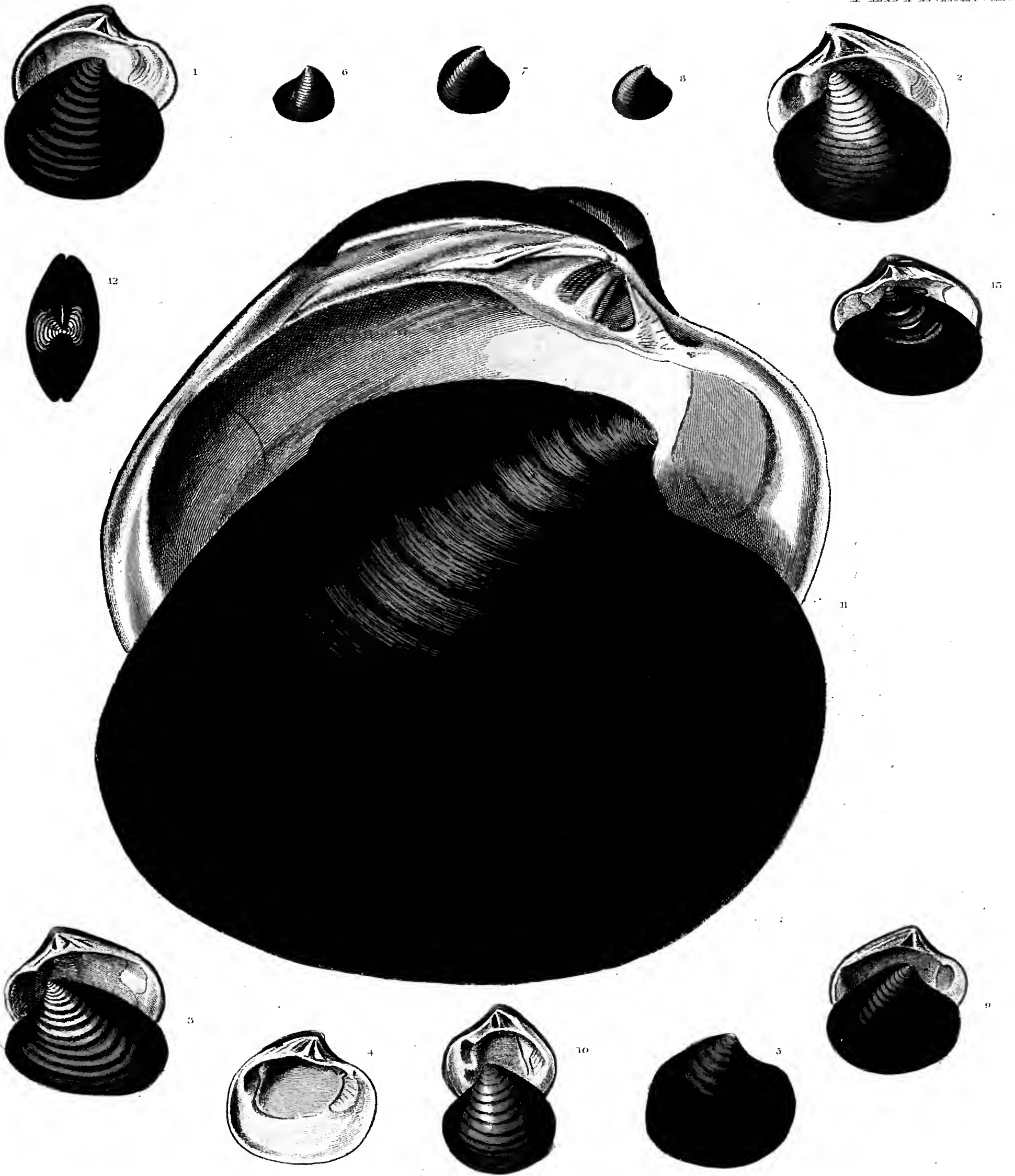




Drawn by Capt. Brown

Engraved by W. L. Lizar, Edinburgh









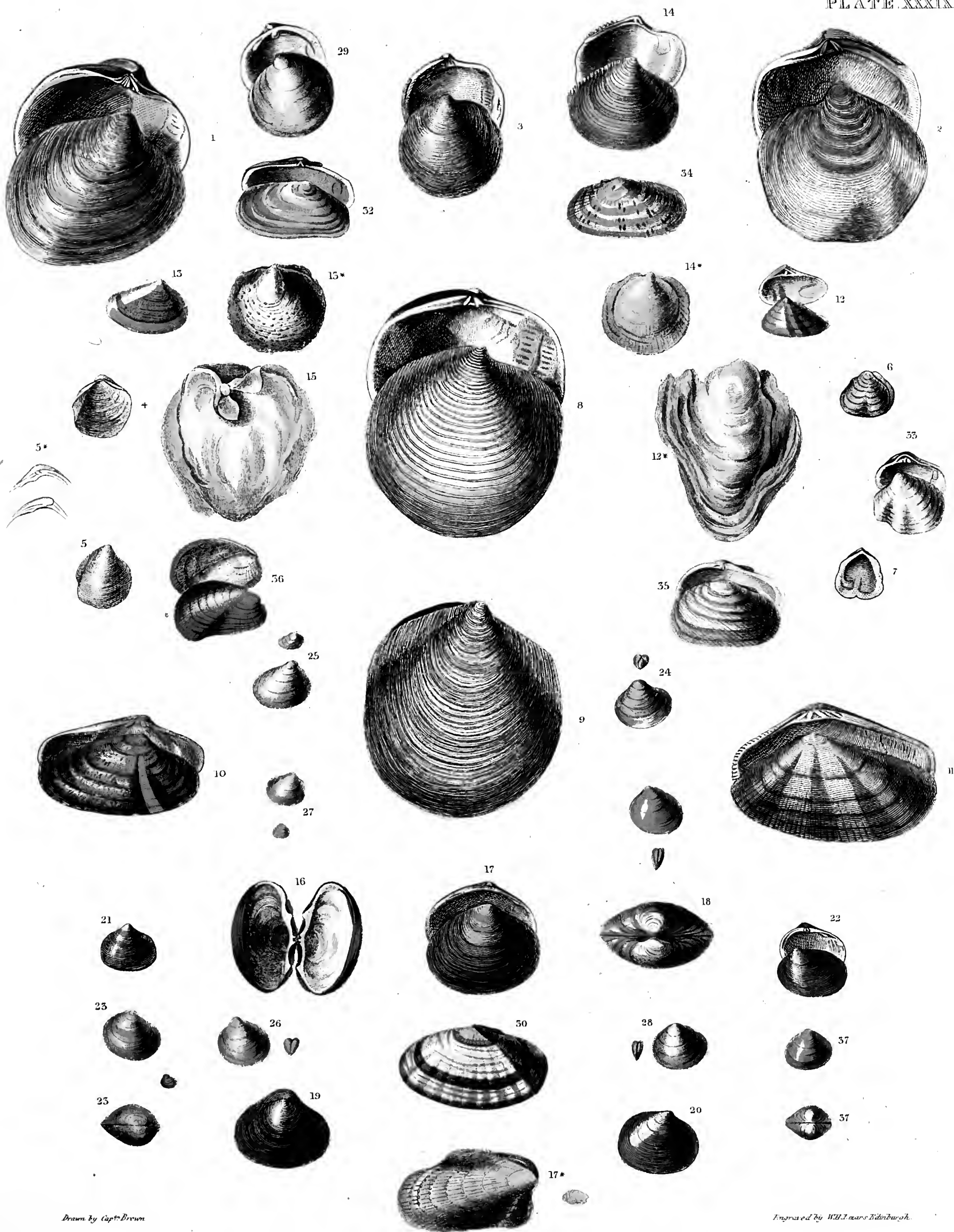
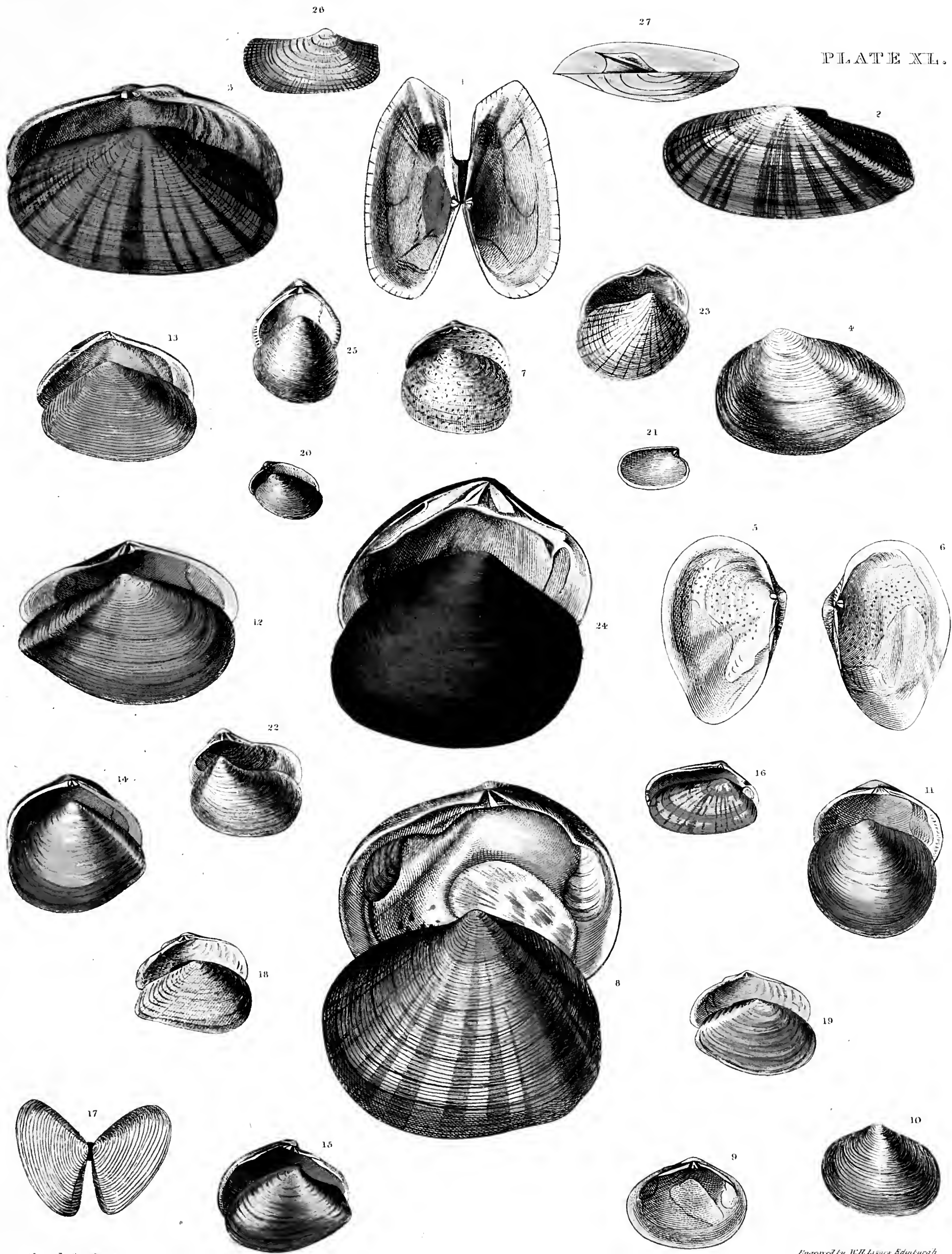




PLATE XL.

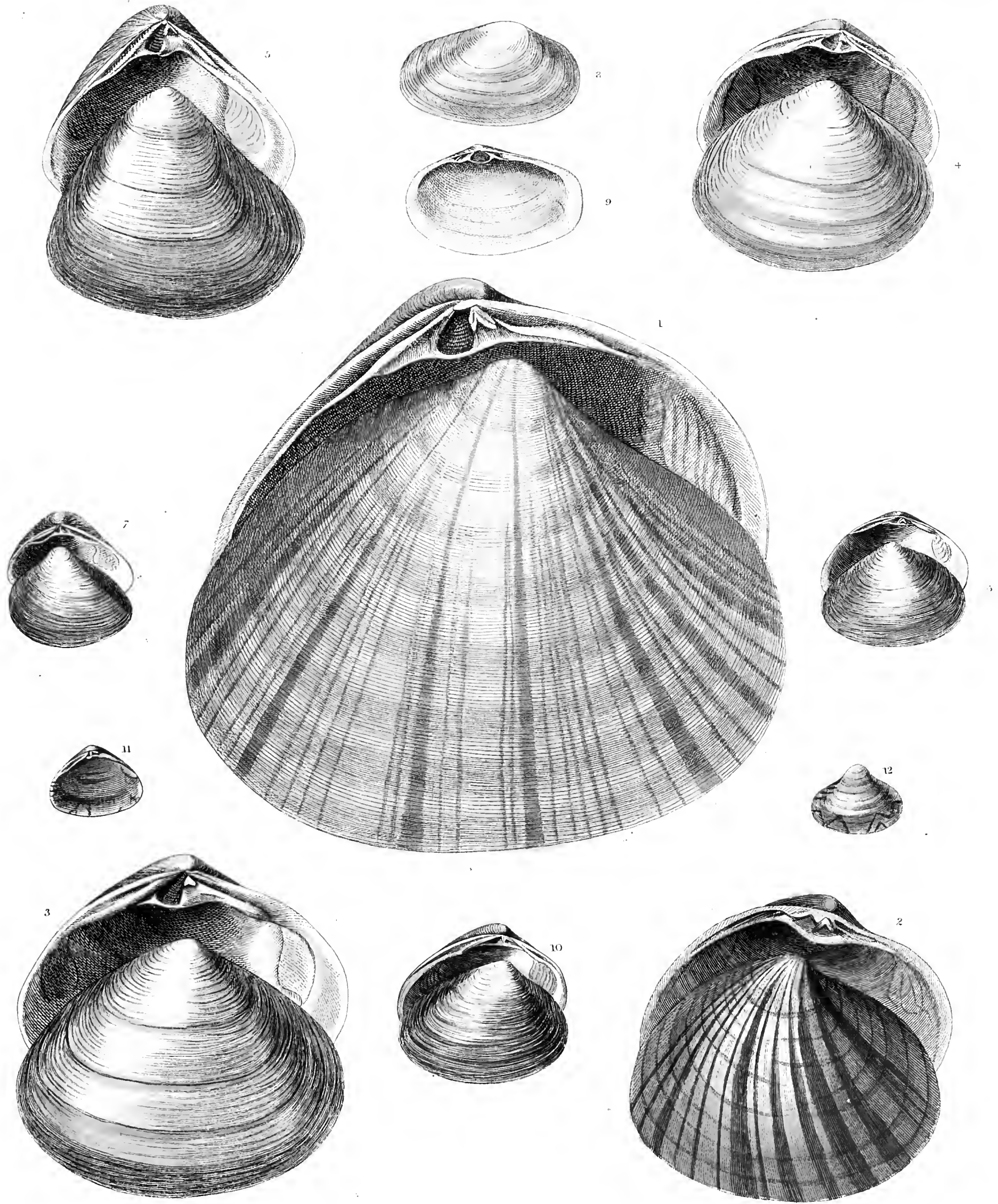


Drawn by Capt. Brown.

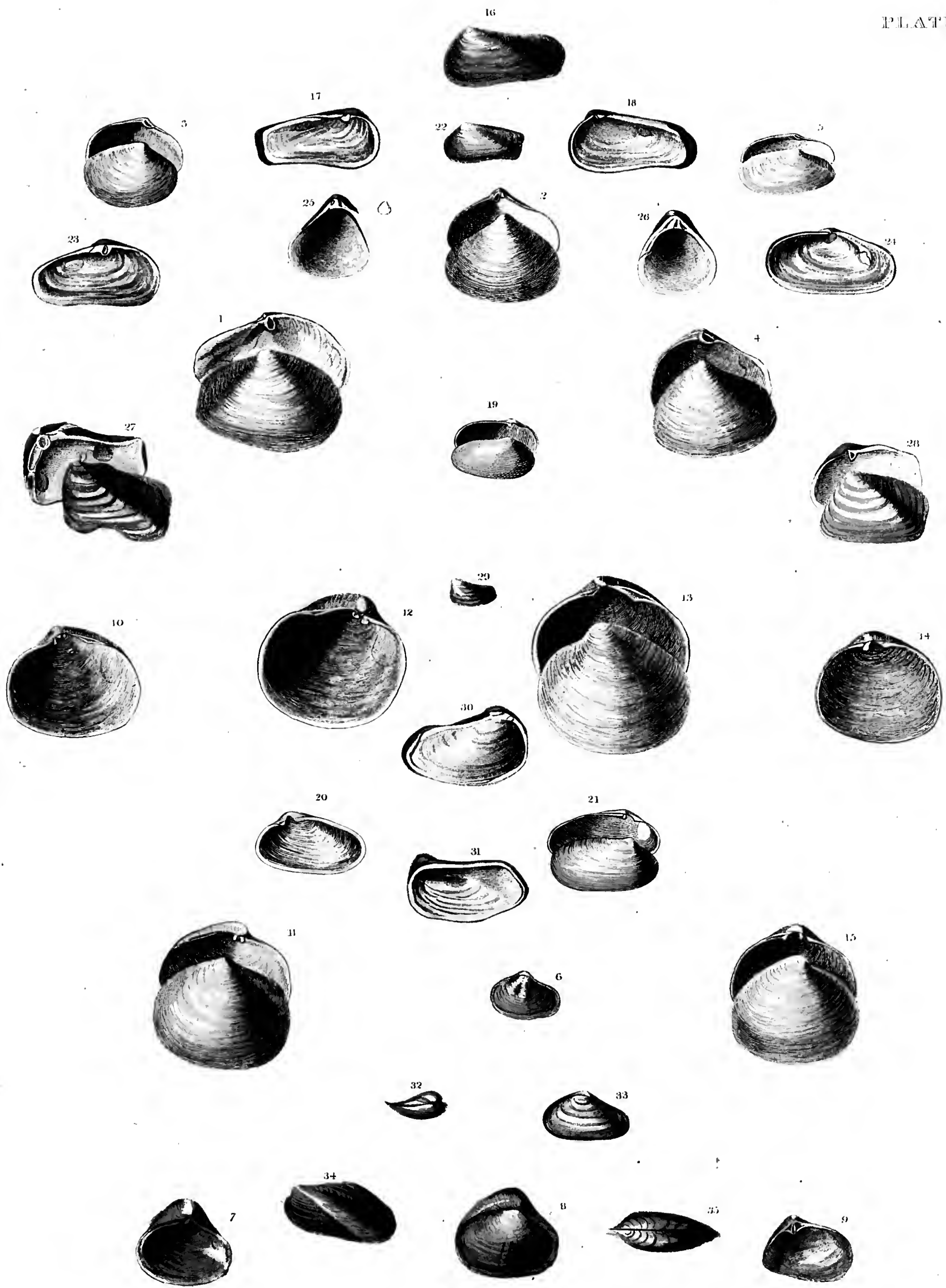
Engraved by W.H. Lissner Edinburgh





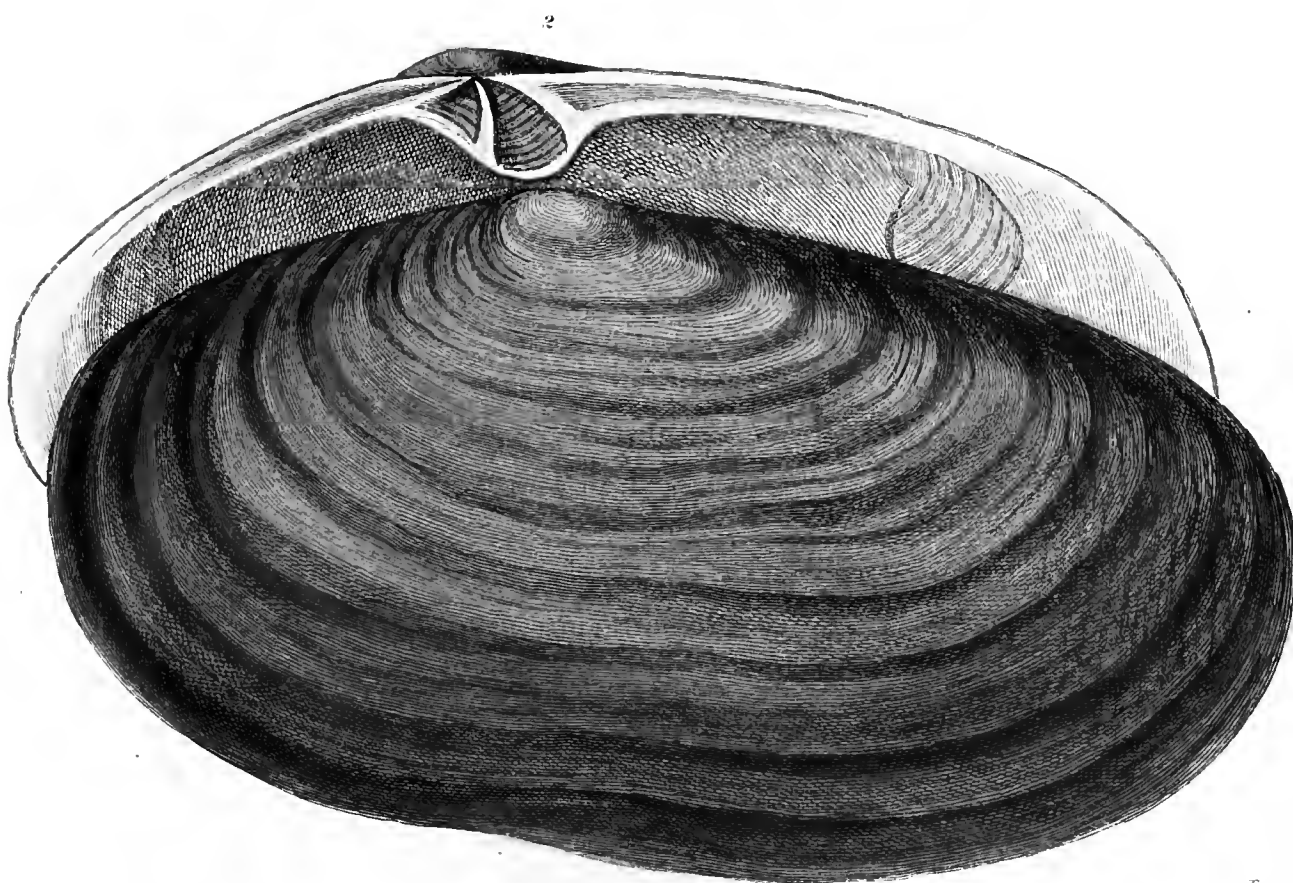
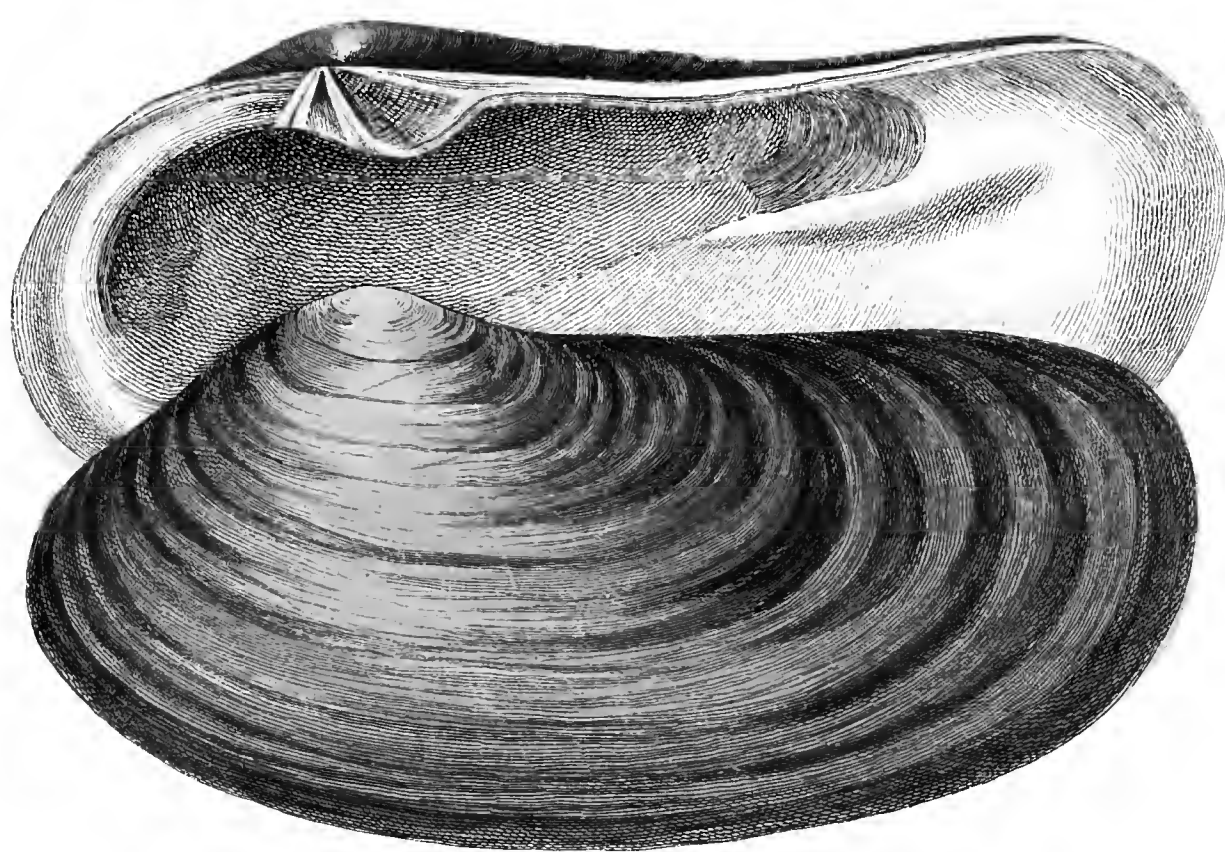
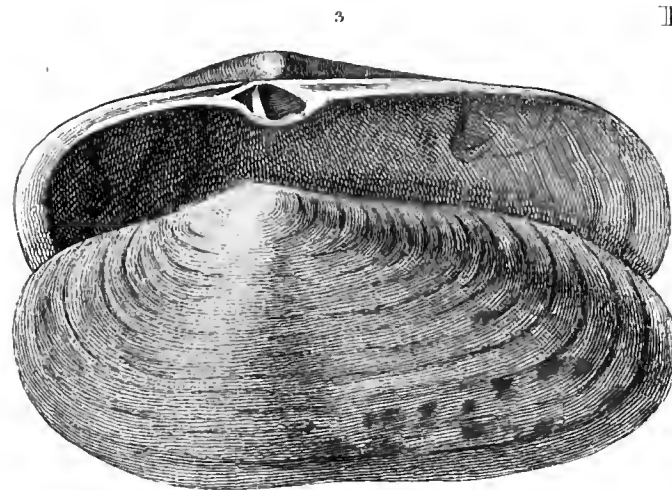
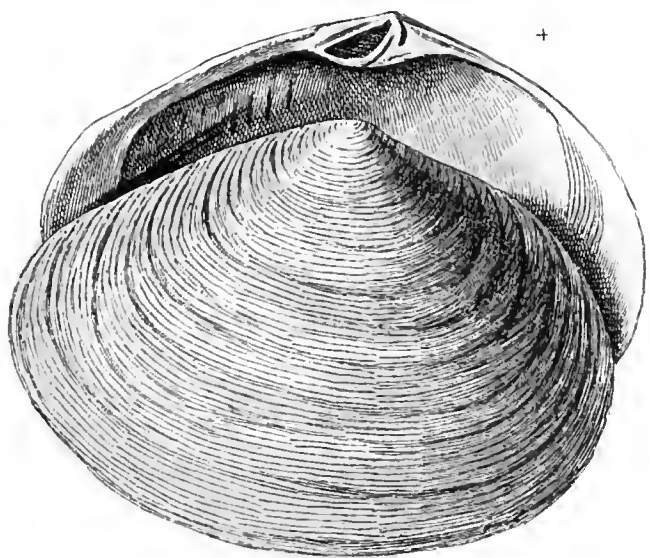
















Drawn by Cap. W. Brown

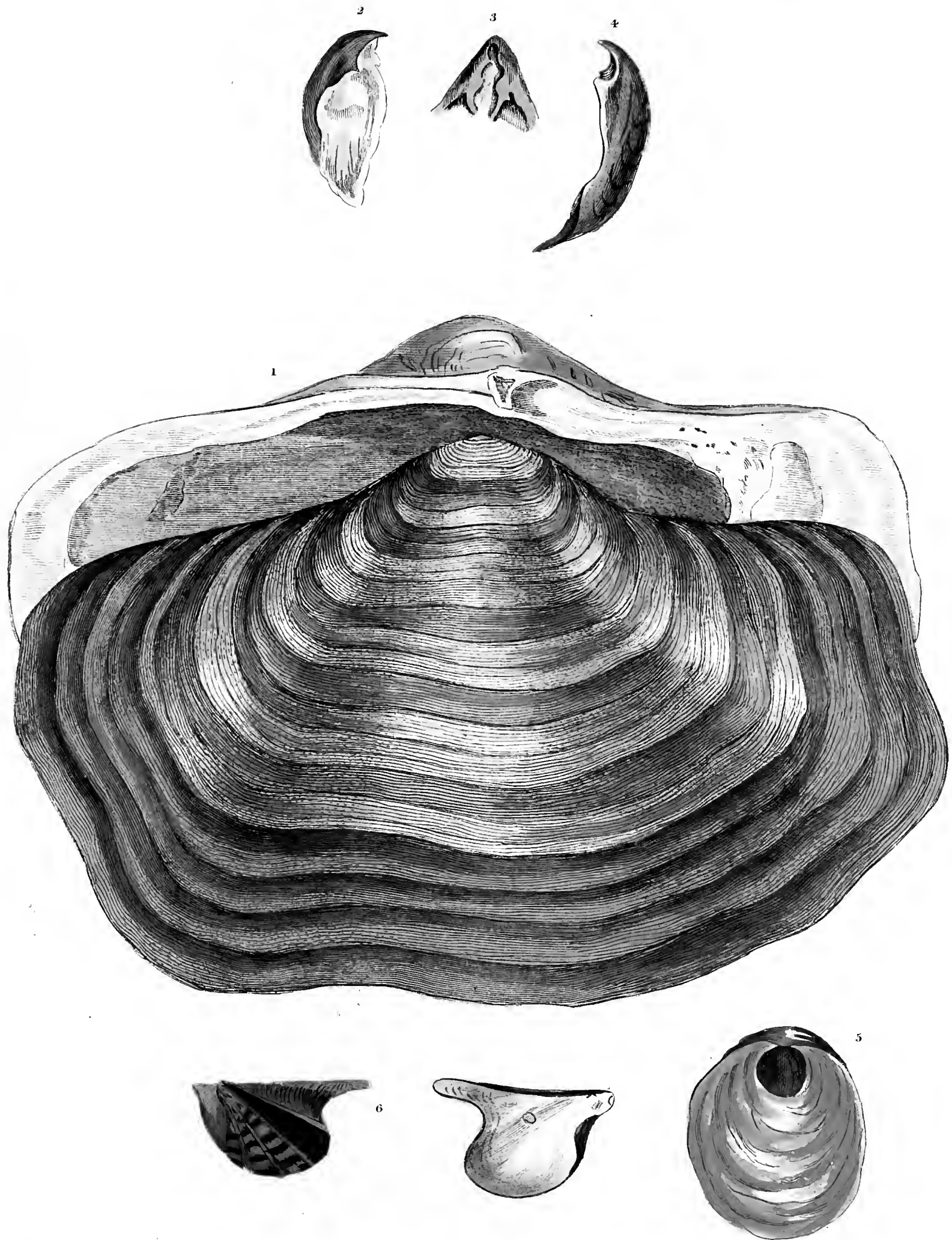
Engraved by W. H. Lissner, Edinburgh.





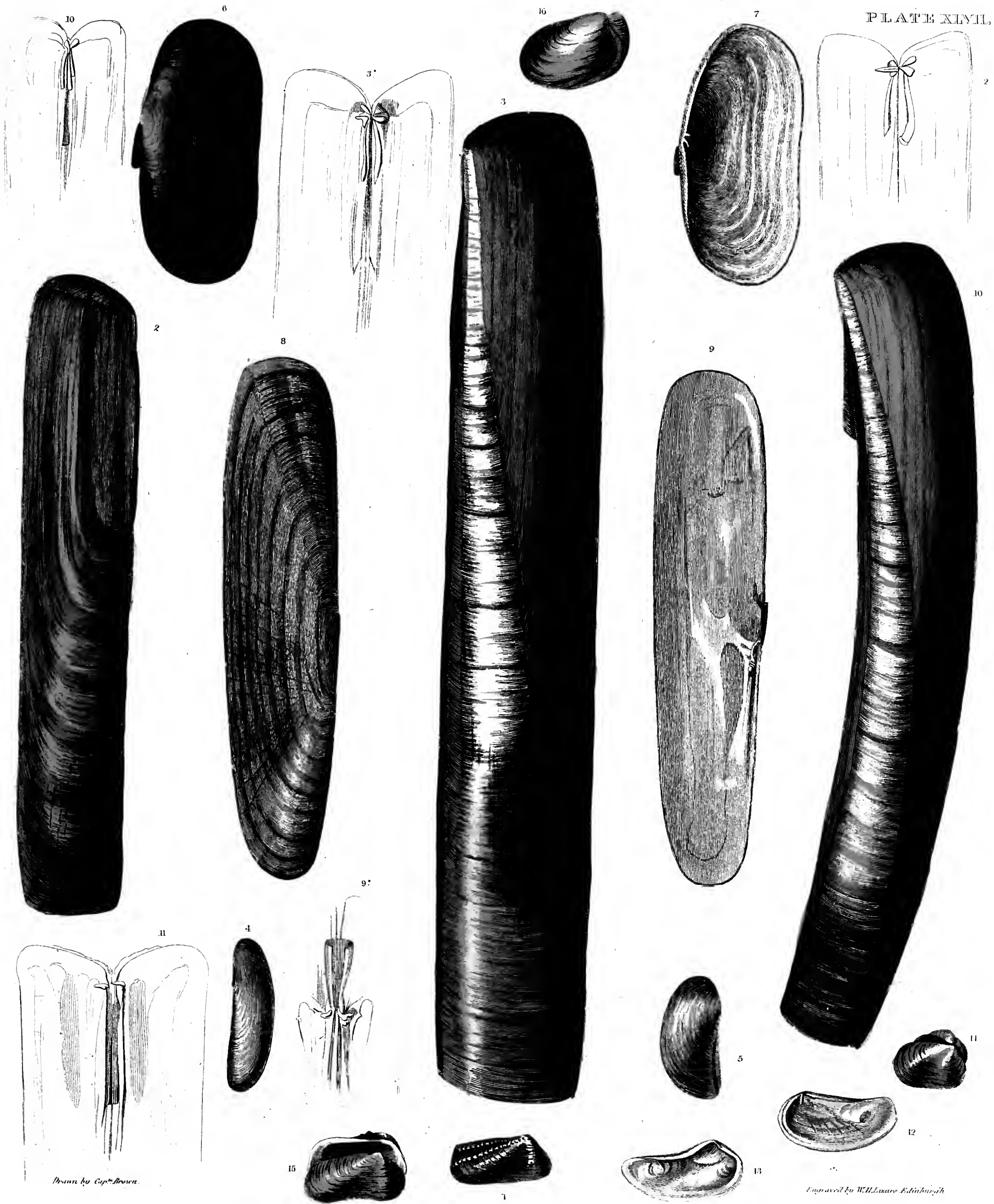








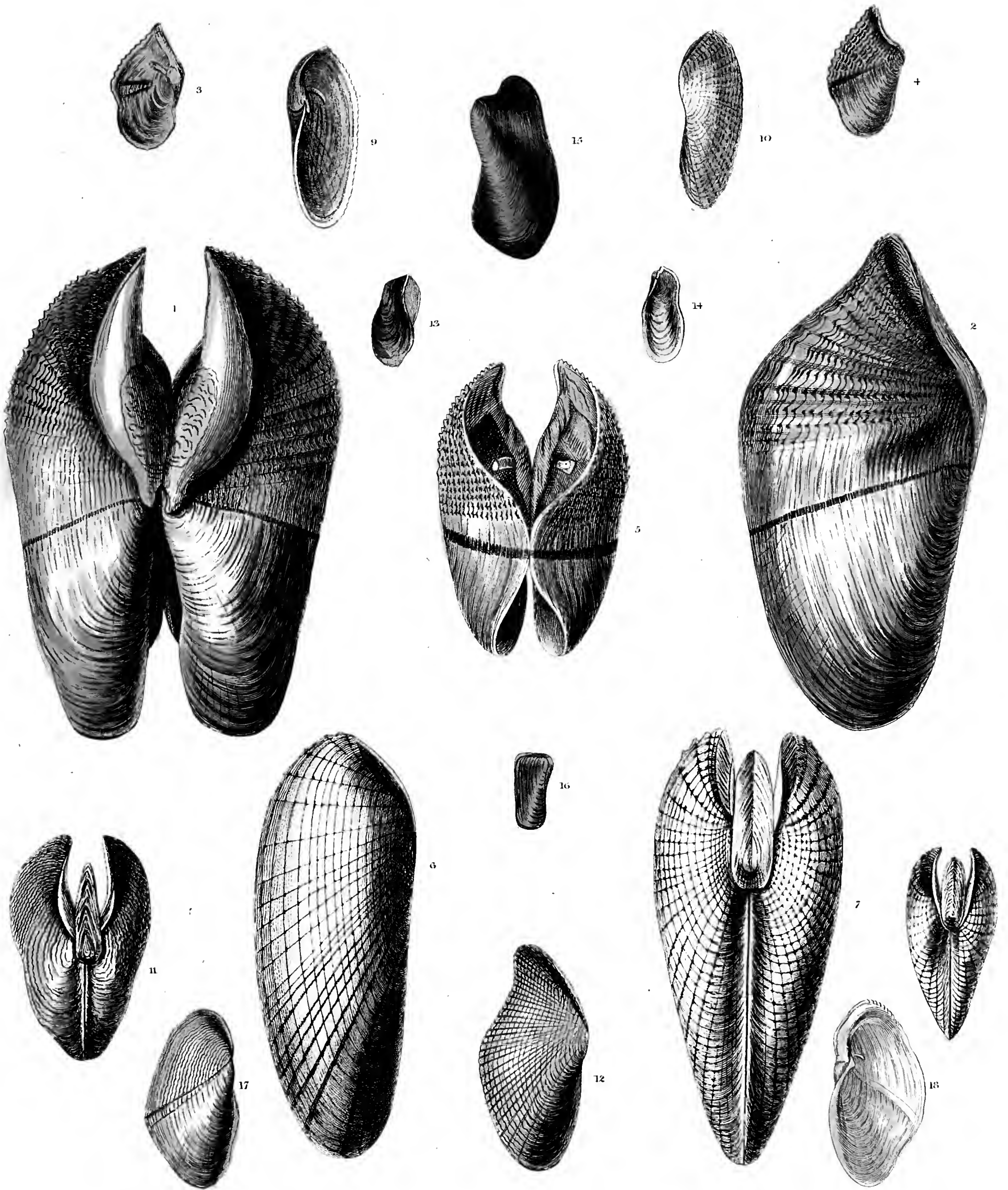




Drawn by Cap. Brown.

Engraved by W.H. Lusk, Edinburgh.



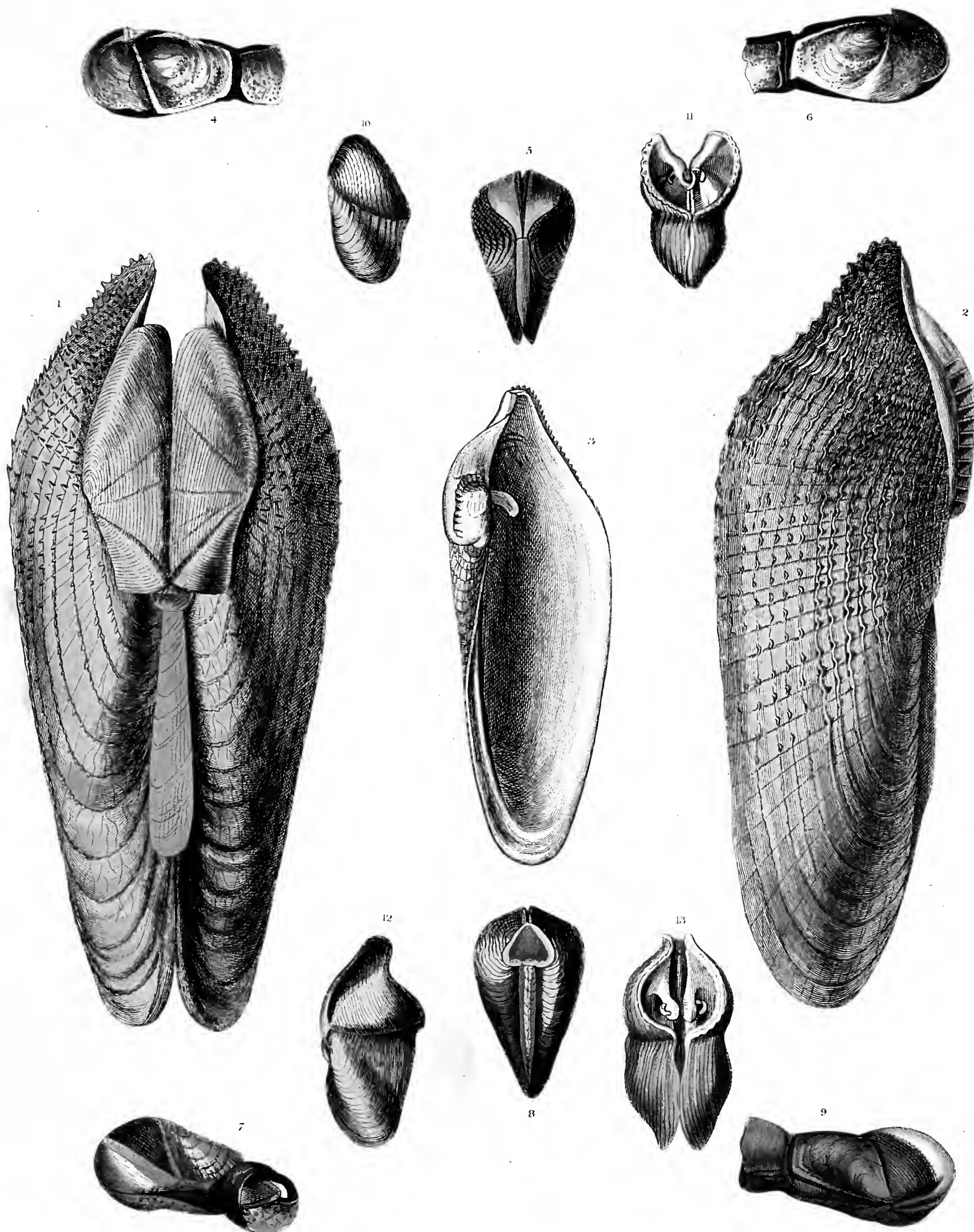


Drawn by Capt. Brown.

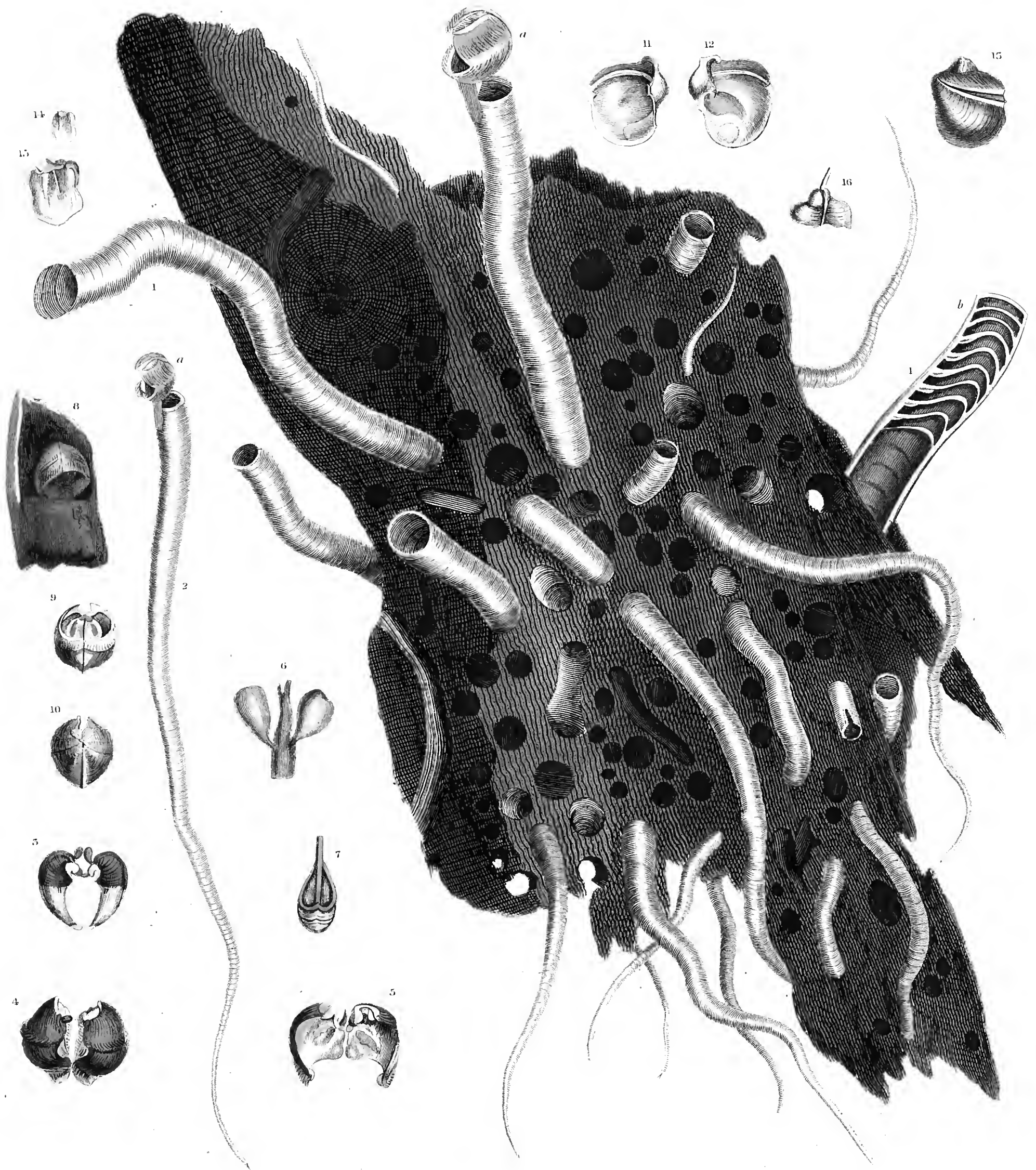
Engraved by W. H. L. & Co. Edinburgh.





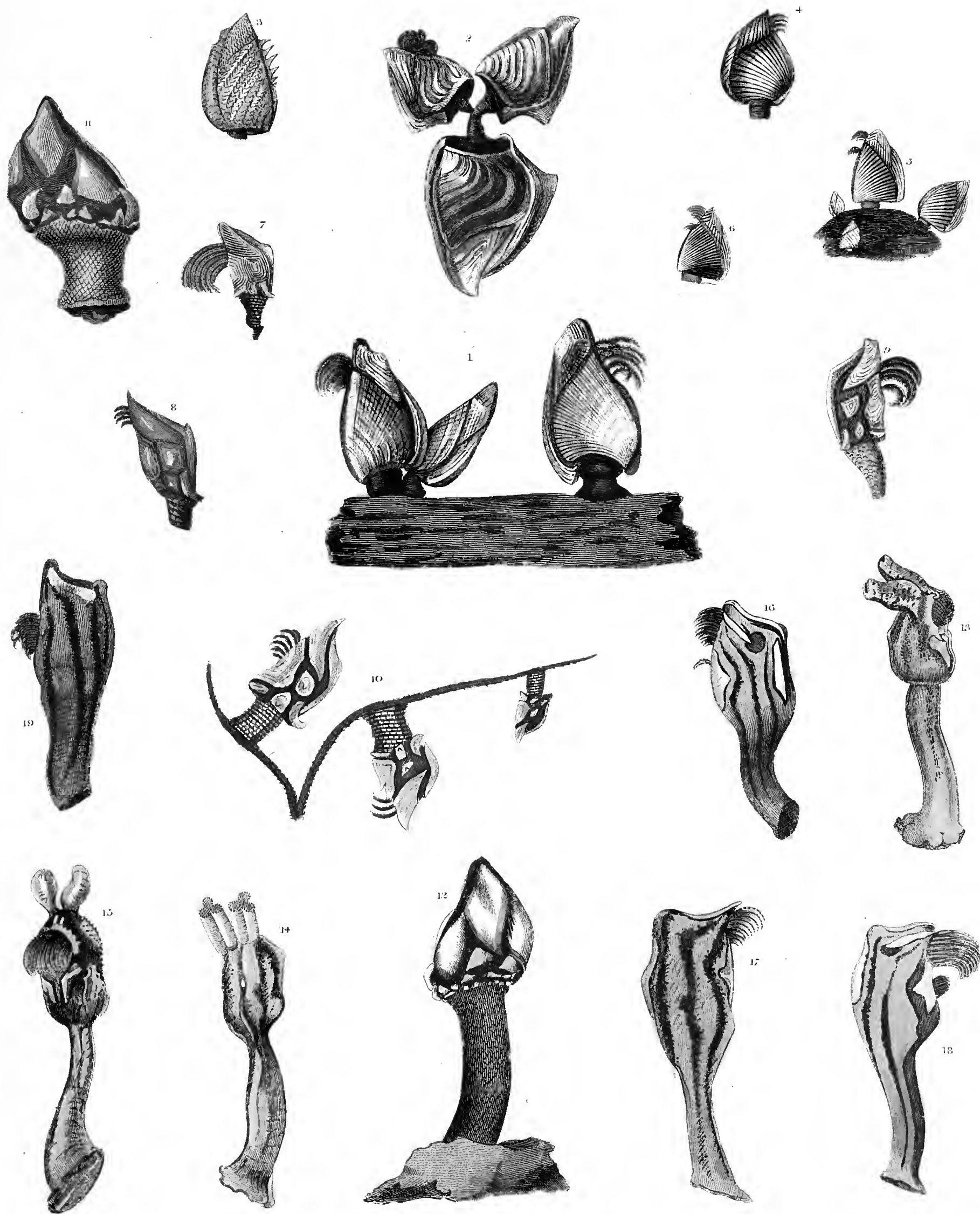




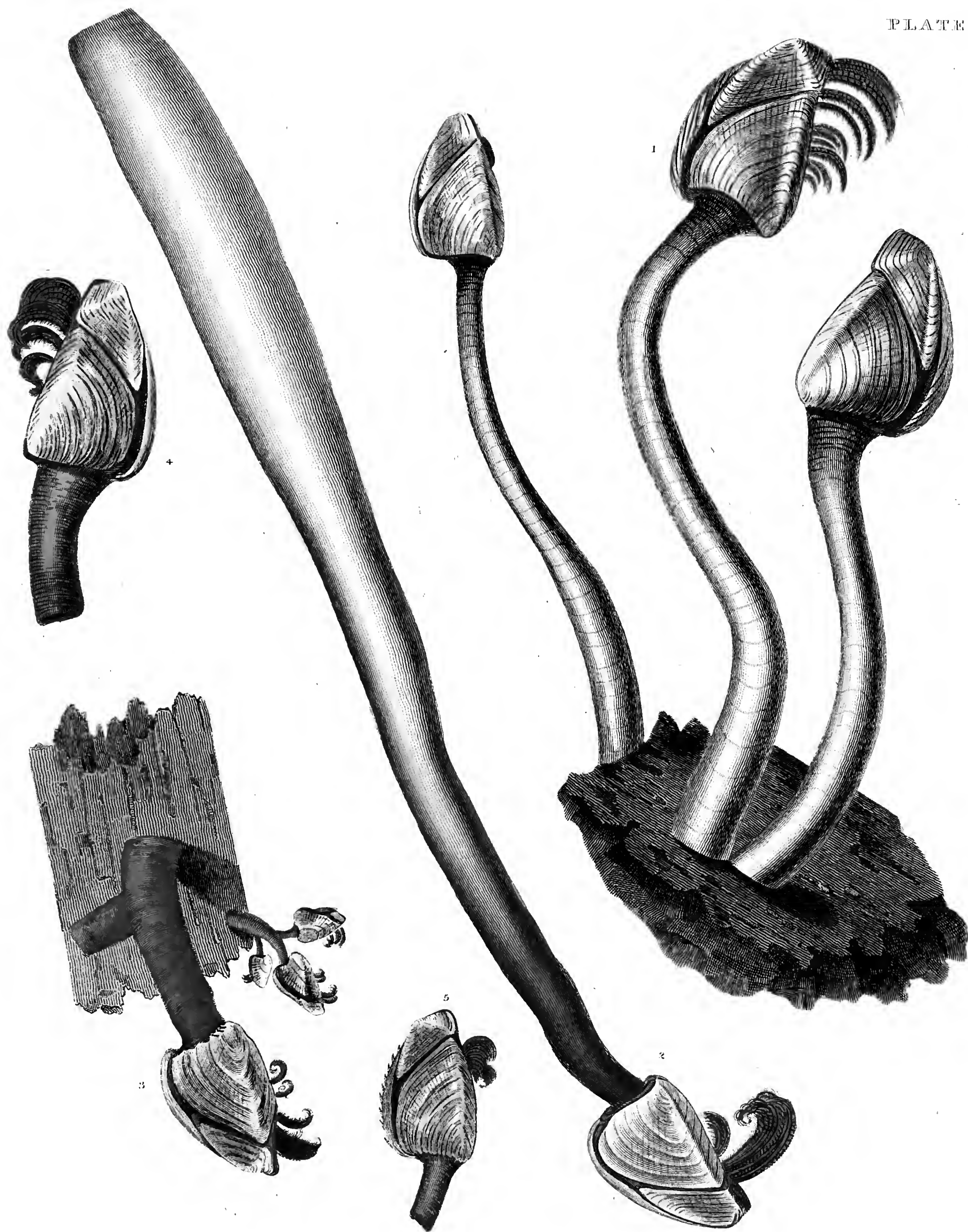


















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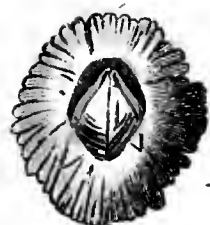
3



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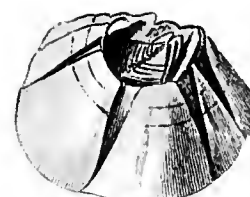
16



18



19



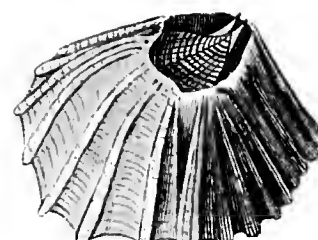
17



22

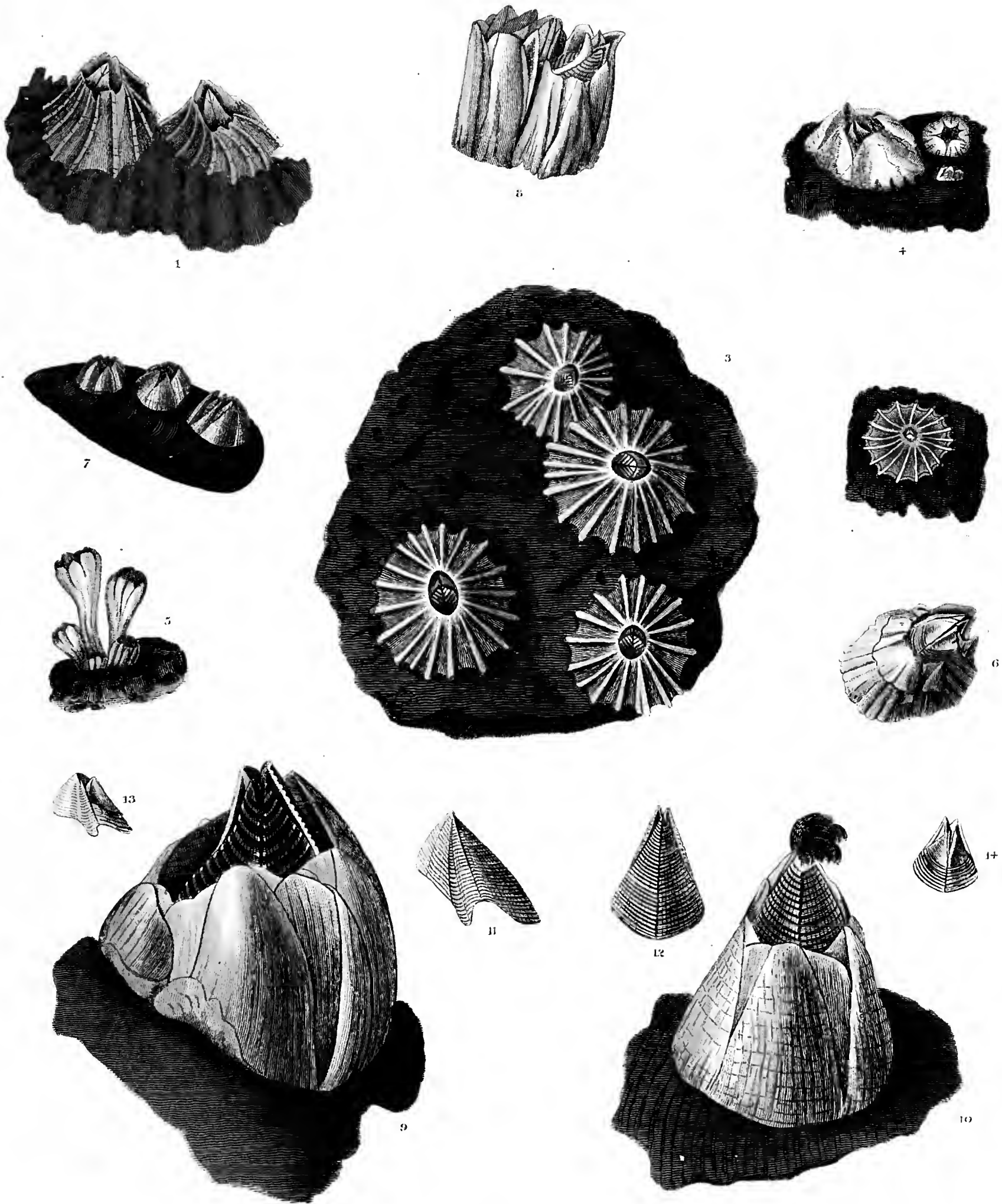


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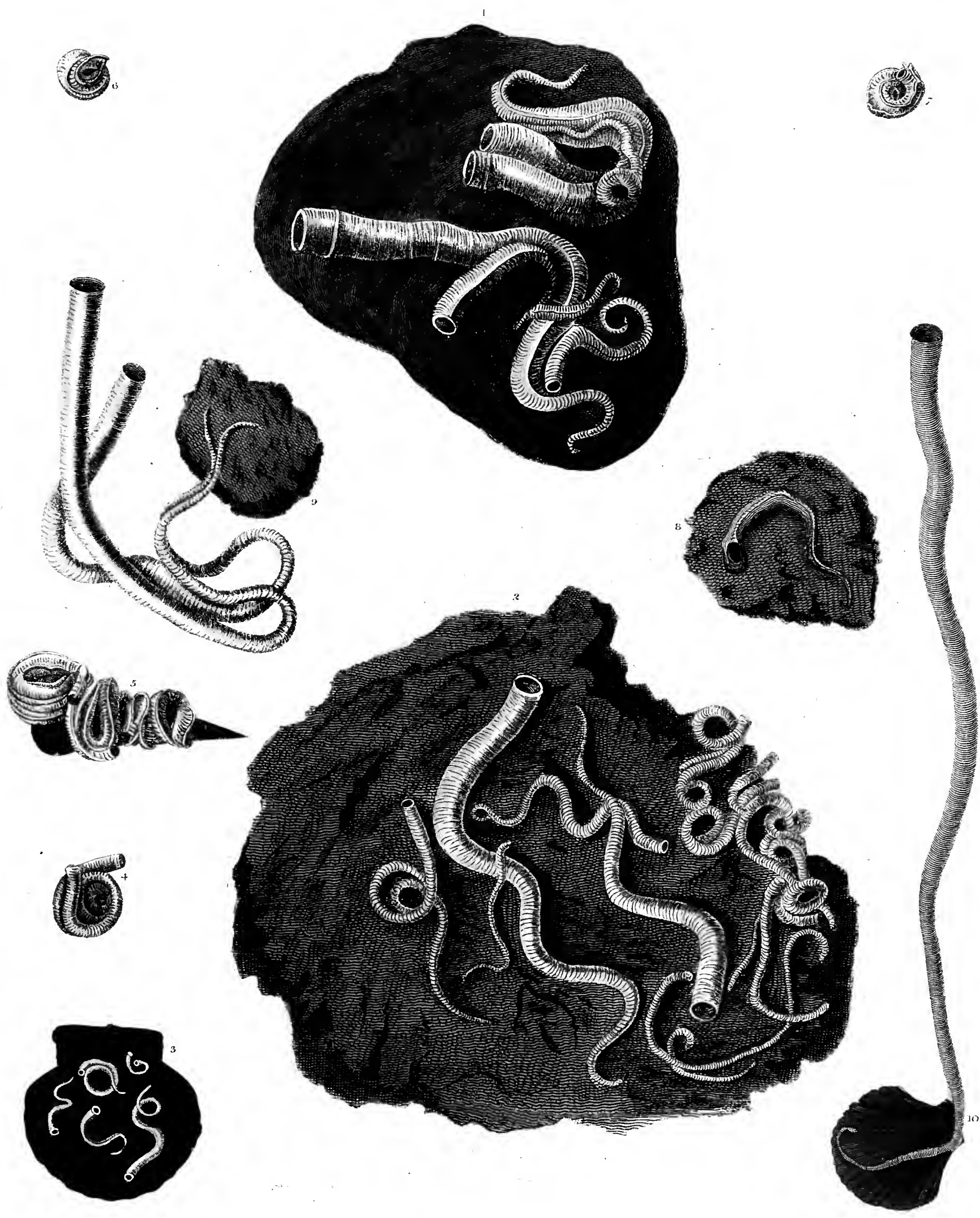
23







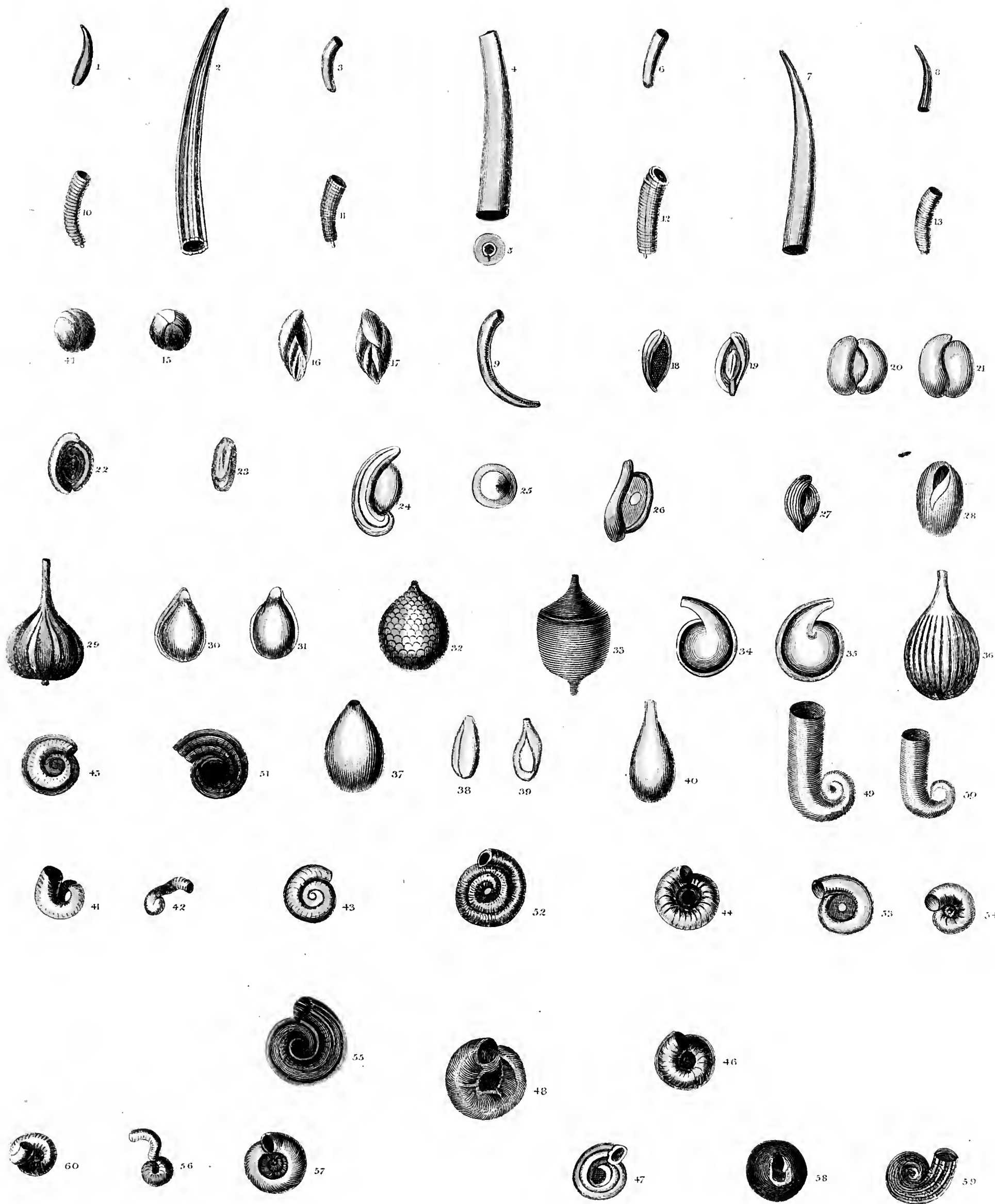




Drawn by Cap<sup>m</sup> Brown

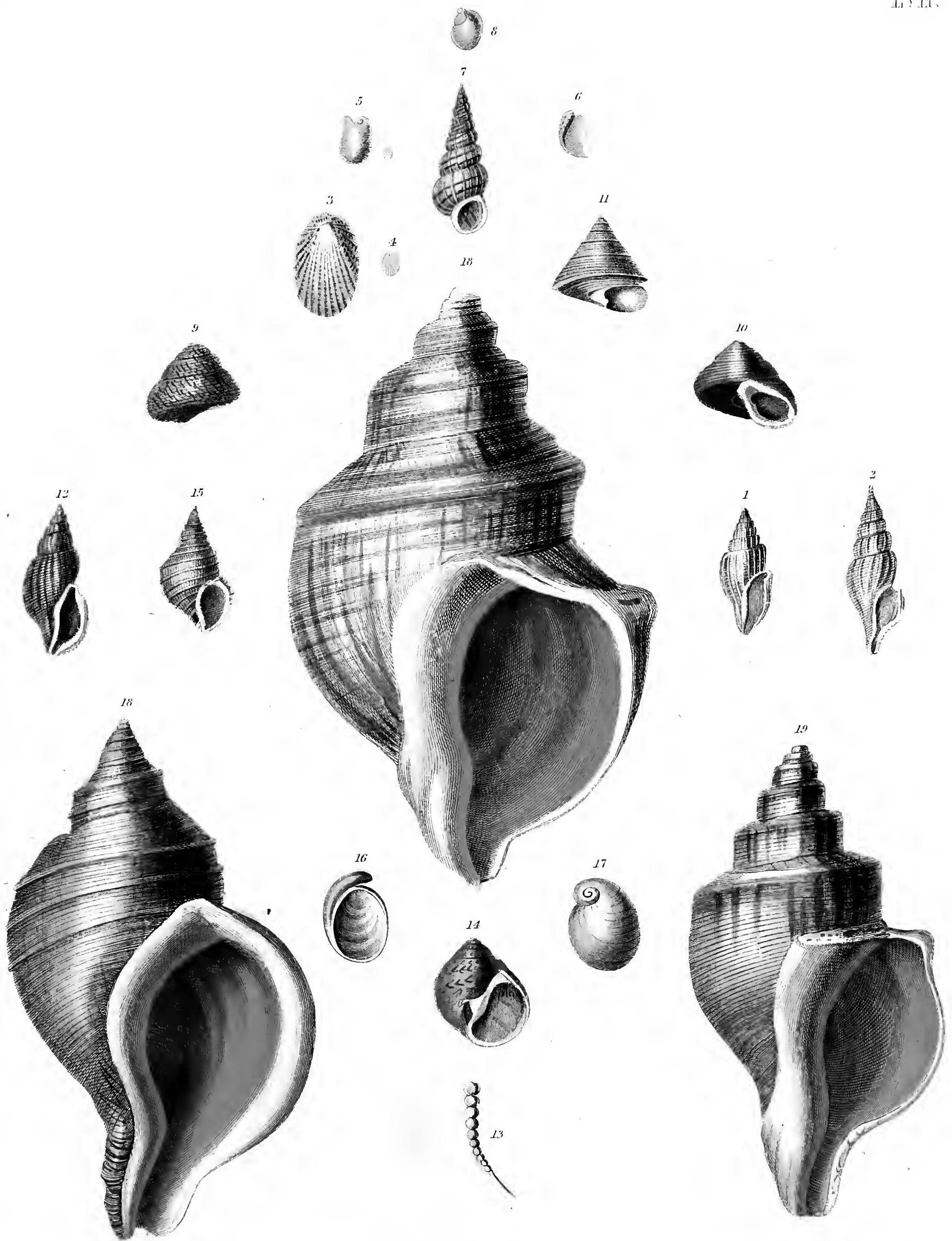
Engraved by W<sup>m</sup> L. Scott & J. Smith





















Figs 1 to 16 Drawn by Rev. B. J. Clarke  
— 17 to 60 by C. J. Brown

Engraved by A. T. Hickman.









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